USDA United States Department of Agriculture

Natural Resources Conservation Service

# Montana Water Supply Outlook Report April 1, 2003

# Water Supply Outlook Report
## and
## Federal - State - Private
## Cooperative Snow Surveys

*For more water supply and resource management information, contact:*
**See Attached List**

*How forecasts are made*

**Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.**

**Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.**

**Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.**

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Natural Resources Conservation Service
Bozeman, Montana

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# Where to Get More Information

This contact list provides you with the names and phone numbers of individuals who can provide more detailed snow survey information for each county.

**Beaverhead County**
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683-3800

**Big Horn County**
Evan Van Order
665-3442

**Blaine County**
Matthew Crampton
357-2320

**Broadwater County**
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**Carbon County**
Gregory Evertz
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**Carter County**
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**Cascade County**
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**Custer County**
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**Daniels County**
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487-5366

**Dawson County**
Linda Peterson-Lohse
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**Deer Lodge County**
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**Fallon County**
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Patty Creamer
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**Flathead County**
Angel Rosario
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**Gallatin County**
Gordon Hill
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**Garfield County**
Clarence Clayton
557-2740

**Glacier County**
Mark Johnson
873-4292

**Golden Valley County**
John Rouane Jr.
323-2103

**Granite County**
Annette Deyling
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**Hill County**
Deana Grabofsky
265-6792

**Jefferson County**
Julie Sacks
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**Judith Basin County**
Rick Caquelin
566-2311

**Lake County**
David Wolf
676-2841

**Lewis and Clark County**
Lex Riggle
449-5278

**Liberty County**
Dawn Wickum
759-5778

**Lincoln County**
Kirk Sullivan
296-2233

**Madison County**
Ole Berkram
842-5741

**McCone County**
Regan Fanning
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**Meagher County**
Tammy DeCock
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**(over)**

**Mineral County**
Mike Odegard
829-3395

**Missoula County**
Mike Odegard
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**Musselshell County**
John Rouane Jr.
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**Park County**
Ron Hoagland
222-2899

**Petroleum County**
Nikki Lott
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**Phillips County**
Lorna Philp
654-1334

**Pondera County**
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**Powder River County**
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**Powell County**
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**Prairie County**
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635-5381

**Ravalli County**
Lane Johnson
363-5010

**Richland County**
Jamie Selting
433-2103

**Roosevelt County**
Robert Bray
787-5232

**Rosebud County**
Rocky Schwagler
356-7333

**Sanders County**
Don Feist
826-3701

**Sheridan County**
Monica Friedrich
765-1801

**Silver Bow County**
Julie Sacks
287-3215

**Stillwater County**
Philip Sandoval
322-5359

**Sweet Grass County**
Chuck Roloff
932-5160

**Teton County**
Stacy Denny-Eneboe
466-5722

**Toole County**
Misty Vermulm
434-5234

**Treasure County**
Stewart Greer
342-5510

**Valley County**
Denise Wiedenheft
228-4321

**Wheatland County**
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**Wibaux County**
Katrina Johnson
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**Yellowstone County**
Shad Weber
657-6135

**12/19/02**

# Montana Water Supply Outlook Report as of April 1, 2003

**March was the second month in a row where mountain snowfall made significant increases in the snow water content. March mountain precipitation was generally above to well above average with several basins about twice of normal. Temperatures were somewhat of a rollercoaster causing low land flooding during a warm spell the second week of March. Valley temperatures were generally above average west of the divide and generally near to below average east of the divide.**

## Snowpack

**As of APRIL 1, mountain snow water contents statewide were 93 percent of average and 97 percent of last year. West of the Divide snowpack was 92 percent of average and 85 percent of last year. East of the Divide snowpack was 96 percent of average and 115 percent of last year.**

| RIVER BASIN | % OF AVERAGE | % OF LAST YEAR | MARCH % CHANGE |
|---|---|---|---|
| COLUMBIA | 92 | 85 | 19 |
| KOOTENAI | 86 | 73 | 17 |
| FLATHEAD | 86 | 78 | 17 |
| UPPER CLARK FORK | 104 | 114 | 19 |
| BITTERROOT | 112 | 114 | 25 |
| LOWER CLARK FORK | 84 | 69 | 18 |
| MISSOURI | 92 | 108 | 10 |
| MISSOURI HEADWATERS | 93 | 117 | 3 |
| JEFFERSON | 99 | 129 | 8 |
| MADISON | 80 | 97 | 5 |
| GALLATIN | 91 | 108 | 5 |
| MISSOURI MAINSTEM | 91 | 97 | 17 |
| HEADWATERS MAINSTEM | 101 | 124 | 11 |
| SMITH-JUDITH-MUSSELSHELL | 98 | 118 | 4 |
| SUN-TETON-MARIAS | 83 | 76 | 27 |
| MILK (Bearpaw Mtns.) | 34 | 31 | -34 |
| ST. MARY | 88 | 75 | 17 |
| ST. MARY & MILK | 80 | 68 | 11 |
| YELLOWSTONE | 104 | 131 | 14 |
| UPPER YELLOWSTONE | 103 | 127 | 11 |
| LOWER YELLOWSTONE (WYOMING) | 105 | 135 | 18 |
| WIND | 97 | 127 | 15 |
| SHOSHONE | 105 | 131 | 18 |
| BIGHORN | 104 | 131 | 17 |
| TONGUE | 115 | 149 | 21 |
| POWDER | 105 | 129 | 23 |

## Precipitation

**March mountain and valley precipitation across the state was 156 percent of average and 140 percent of last year, while the water year precipitation was 91 percent of average and 95 percent of last year. West of the Continental Divide, March mountain and valley precipitation was 191 percent of average and 135 percent of last year and the water year precipitation was 92 percent of average and 84 percent of last year. East of the Divide, March mountain and valley precipitation was 133 percent of average and 144 percent of last year and the water year precipitation was 89 percent of average and 107 percent of last year.**

| RIVER BASIN | MARCH % OF AVERAGE | WATER YEAR % OF AVERAGE |
|---|---|---|
| COLUMBIA | 191 | 92 |
| KOOTENAI | 195 | 88 |
| FLATHEAD | 185 | 86 |
| UPPER CLARK FORK | 183 | 98 |
| BITTERROOT | 220 | 108 |
| LOWER CLARK FORK | 203 | 92 |
| MISSOURI | 121 | 86 |
| JEFFERSON | 124 | 90 |
| MADISON | 102 | 79 |
| GALLATIN | 117 | 86 |
| MISSOURI MAINSTEM | 137 | 93 |
| SMITH-JUDITH-MUSSELSHELL | 116 | 91 |
| SUN-TETON-MARIAS | 872 | 84 |
| MILK | 75 | 78 |
| ST. MARY | 204 | 86 |
| YELLOWSTONE | 156 | 99 |
| UPPER YELLOWSTONE | 145 | 101 |
| LOWER YELLOWSTONE | 188 | 106 |
| WIND | 158 | 100 |
| SHOSHONE | 200 | 113 |
| BIGHORN | 133 | 96 |
| TONGUE | 207 | 122 |
| POWDER | 212 | 118 |

## Reservoirs

**Major reservoir storage's statewide was 95 percent of average and 105 percent of last year. Reservoir storage west of the Continental Divide was 156 percent of average and 124 percent of last year. East of the Continental Divide, reservoir storage was 79 percent of average and 97 percent of last year.**

| RIVER BASIN | % OF AVERAGE | % OF LAST YEAR |
|---|---|---|
| COLUMBIA | 156 | 124 |
| KOOTENAI | 201 | 140 |
| FLATHEAD | 132 | 114 |
| UPPER CLARK FORK | 106 | 117 |
| BITTERROOT | 98 | 134 |
| LOWER CLARK FORK | 120 | 100 |
| MISSOURI | 79 | 97 |
| JEFFERSON | 51 | 91 |
| MADISON | 107 | 100 |
| GALLATIN | 136 | 96 |
| MISSOURI MAINSTEM | 77 | 94 |
| SMITH-JUDITH-MUSSELSHELL | 44 | 157 |
| SUN-TETON-MARIAS | 117 | 132 |
| MILK | 103 | 779 |
| ST. MARY | 72 | 96 |
| YELLOWSTONE | 79 | 97 |
| UPPER YELLOWSTONE | 120 | 123 |
| LOWER YELLOWSTONE | 78 | 96 |

## Streamflow

**With normal or above normal spring and summer rain, streamflows in most areas are expected to be near or above those experienced last year. Actual streamflows will now depend upon how the snowpack melts and the timing and amount of rainfall received.**

**West of the Continental Divide, streamflow forecasts average between 70 and 81 percent of average and east of the Continental Divide, average between 53 and 66 percent of average.**

**Below are averaged river basin streamflow forecast summaries for the period April 1 through July 31. THESE FORECASTS ASSUME NEAR NORMAL SPRING CONDITIONS AND DO NOT ACCOUNT FOR WELL BELOW AVERAGE (70% or less) OR WELL ABOVE AVERAGE (130% or more) SNOWMELT OR SPRING RAIN. Specific forecast probabilities are available in each individual River Basin Report.**

| RIVER BASIN | April-July THIS YEAR % OF AVERAGE | April-July LAST YEAR % OF AVERAGE |
|---|---|---|
| COLUMBIA | 70 to 81 | 76 to 86 |
| KOOTENAI | 68 to 77 | 83 to 92 |
| FLATHEAD | 66 to 74 | 78 to 87 |
| UPPER CLARK FORK | 68 to 84 | 57 to 69 |
| BITTERROOT | 91 to 100 | 80 to 89 |
| LOWER CLARK FORK | 67 to 75 | 84 to 92 |
| MISSOURI | 48 to 62 | 55 to 68 |
| JEFFERSON | 42 to 58 | 45 to 59 |
| MADISON | 63 to 69 | 71 to 78 |
| GALLATIN | 60 to 70 | 60 to 70 |
| MISSOURI MAINSTEM | 52 to 67 | 51 to 66 |
| SMITH-JUDITH-MUSSELSHELL | 39 to 47 | 41 to 53 |
| SUN-TETON-MARIAS | 49 to 65 | 72 to 90 |
| MILK | 50 to 65 | 48 to 63 |
| ST. MARY | 69 to 76 | 81 to 88 |
| YELLOWSTONE | 64 to 75 | 52 to 62 |
| UPPER YELLOWSTONE | 70 to 81 | 60 to 68 |
| LOWER YELLOWSTONE | 55 to 67 | 44 to 55 |

# Surface Water Supply Index

**The Surface Water Supply Index (SWSI) is an indicator of surface water supply conditions for the spring and summer months. Water users that rely on mountain precipitation can use the index to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.**

| SWSI RATING | SURFACE WATER CONDITION |
|---|---|
| +3.0 to +4.0 | Extremely Wet |
| +2.0 to +3.0 | Moderately Wet |
| +1.0 to +2.0 | Slightly Wet |
| -1.0 to +1.0 | Near Average |
| -1.0 to -2.0 | Slightly Dry |
| -2.0 to -3.0 | Moderately Dry |
| -3.0 to -4.0 | Extremely Dry |

| SWSI | Basin |
|---|---|
| -2.3 | Tobacco River |
| -1.4 | Kootenai Ft. Steele to Libby Dam |
| +1.3 | Kootenai River below Libby Dam |
| -1.9 | Fisher River |
| -1.9 | Yaak River |
| -2.5 | North Fork Flathead River |
| -2.7 | Middle FORK Flathead River |
| -1.8 | South Fork Flathead River |
| -2.5 | Flathead River at Columbia Falls |
| -2.7 | Stillwater/Whitefish Rivers |
| -2.8 | Swan River |
| -2.4 | Flathead River at Polson |
| -1.1 | Mission Valley |
| -1.5 | Little Bitterroot River |
| -1.3 | Clark Fork River above Milltown |
| -1.8 | Blackfoot River |
| +0.3 | Bitterroot River |
| -1.0 | Clark Fork River below Bitterroot River |
| -1.9 | Clark Fork River below Flathead River |
| -4.0 | Beaverhead River |
| -3.0 | Ruby River |
| -1.7 | Big Hole River |
| -1.2 | Boulder River (Jefferson) |
| -1.4 | Jefferson River |
| -1.6 | Madison River |
| -2.1 | Gallatin River |
| -2.4 | Missouri River above Canyon Ferry |
| -1.7 | Missouri River below Canyon Ferry |
| -1.3 | Smith River |
| -3.5 | Sun River |
| -1.3 | Teton River |
| -1.3 | Birch/Dupuyer Creeks |
| -1.5 | Marias River above Tiber |
| +0.1 | Marias River below Tiber |
| -2.7 | Musselshell River |
| -0.3 | Missouri River above Ft. Peck |
| -2.8 | Missouri River below Ft. Peck |
| -1.1 | Milk River |
| -2.0 | Dearborn River near Craig |
| -1.3 | Yellowstone River above Livingston |
| -1.6 | Shields River |
| -2.5 | Boulder River (Yellowstone) |
| -2.4 | Stillwater River |
| +1.2 | Rock/Red Lodge Creeks |
| -2.0 | Clarks Fork River |
| -1.7 | Yellowstone River above Bighorn River |
| -2.9 | Bighorn River below Bighorn Lake |
| -1.8 | Little Bighorn River |
| -2.2 | Yellowstone River below Bighorn River |
| -2.3 | Tongue River |
| -1.7 | Powder River |

SNOTEL AND SNOW COURSE SUMMARY
APRIL 2003

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 71-00 |
|---|---|---|---|---|---|---|
| ABE LINCOLN | 4440 | 3/26/03 | 38 | 11.4 | 21.5 | 18.9 |
| ABUNDANCE LAKE | 8800 | 3/28/03 | 67 | 20.8 | 20.6 | 20.6 |
| ALBRO LAKE SNOTEL | 8300 | 4/01/03 | 55 | 17.1 | 14.2 | 20.8 |
| AMBROSE | 6480 | 3/24/03 | 49 | 16.1 | 10.5 | 12.4 |
| ARCH FALLS | 7350 | 3/28/03 | 46 | 11.2 | 9.4 | 11.9 |
| ASHLEY DIVIDE | 4820 | 4/01/03 | 8 | 2.4 | 8.0 | 6.0 |
| ASHLEY LAKE | 4000 | 4/01/03 | 10 | 2.8 | 6.1 | 5.5 |
| BADGER PASS SNOTEL | 6900 | 4/01/03 | 82 | 30.7 | 40.6 | 35.3 |
| BALD RIDGE | 7500 | 4/01/03 | --- | 12.2E | 8.1 | 12.4 |
| BANFIELD MTN SNOTEL | 5600 | 4/01/03 | 52 | 16.4 | 22.1 | 19.8 |
| BAREE CREEK | 5500 | 3/26/03 | 98 | 36.6 | 40.1 | 43.1 |
| BAREE MIDWAY | 4600 | 3/26/03 | 75 | 25.3 | 31.8 | 33.0 |
| BAREE TRAIL | 3800 | 3/26/03 | 20 | 6.2 | 16.3 | 7.7 |
| BARKER LAKES SNOTEL | 8250 | 4/01/03 | 50 | 13.8 | 10.7 | 14.6 |
| BASIN CREEK SNOTEL | 7180 | 4/01/03 | --- | 7.7 | 5.0 | 8.7 |
| BASSOO PEAK | 5150 | 3/27/03 | 27 | 7.2 | 12.4 | 9.7 |
| BEAGLE SPGS SNOTEL | 8850 | 4/01/03 | --- | 8.3 | 6.5 | 9.3 |
| BEAR BASIN | 8150 | 3/26/03 | 55 | 17.8 | 17.0 | 20.4 |
| BEAVER CREEK SNOTEL | 7850 | 4/01/03 | 51 | 15.1 | 16.6 | 18.2 |
| BERRY MEADOW | 7000 | 3/28/03 | 26 | 7.2 | 4.6 | 7.4 |
| BIG CREEK | 6750 | 3/29/03 | 106 | 36.4 | 40.0 | 43.7 |
| BIG SNOWY | 7150 | 3/25/03 | 53 | 17.0 | 14.8 | 20.2 |
| BISSON CREEK SNOTEL | 4920 | 4/01/03 | 26 | 9.2 | 9.7 | 9.9 |
| BLACK BEAR SNOTEL | 7950 | 4/01/03 | 88 | 31.7 | 38.6 | 39.8 |
| BLACK MOUNTAIN | 7750 | 3/28/03 | 51 | 15.2 | 9.2 | 14.6 |
| BLACK PINE SNOTEL | 7100 | 4/01/03 | 39 | 12.9 | 9.1 | 12.5 |
| BLACKTAIL | 5650 | 3/29/03 | 42 | 12.2 | 16.0 | 14.2 |
| BLOODY DICK SNOTEL | 7550 | 4/01/03 | 46 | 15.5 | 9.2 | 12.6 |
| BLUE LAKE | 5900 | 3/30/03 | 55 | 20.2 | 25.6 | 23.7 |
| BOTS SOTS | 7750 | 3/31/03 | 42 | 11.3 | 5.9 | 7.8 |
| BOULDER MTN SNOTEL | 7950 | 4/01/03 | 63 | 20.4 | 19.0 | 20.4 |
| BOX CANYON SNOTEL | 6700 | 4/01/03 | 31 | 10.3 | 8.5 | 10.4 |
| BOXELDER CREEK | 5100 | 3/25/03 | 12 | 4.2 | 6.0 | 7.6 |
| BRACKETT CR SNOTEL | 7320 | 4/01/03 | 62 | 22.5 | 19.3 | 21.5 |
| BRANHAM LAKES | 8850 | 3/31/03 | 78 | 28.7 | 23.4 | 28.9 |
| BRISTOW CREEK | 3900 | 3/27/03 | 23 | 7.1 | 11.0 | 8.4 |
| BRUSH CREEK TIMBER | 5000 | 3/26/03 | 16 | 4.7 | 8.9 | 8.1 |
| BULL MOUNTAIN | 6600 | 3/27/03 | 19 | 6.1 | 4.5 | 5.9 |
| BURNT MTN SNOTEL | 5880 | 4/01/03 | 14 | 6.1 | 4.7 | -- |
| CABIN CREEK | 5200 | 3/29/03 | 14 | 4.2 | 6.0 | 5.4 |
| CALL ROAD | 8050 | 3/28/03 | 48 | 12.6 | 6.6 | 11.9 |
| CALVERT CR SNOTEL | 6430 | 4/01/03 | --- | 9.7 | 6.5 | 8.1 |
| CAMP MISERY | 6400 | 4/01/03 | 114 | 42.3 | 51.6 | 49.3 |
| CAMP SENIA | 7890 | 3/31/03 | 43 | 9.3 | 4.0 | 6.2 |
| CARROT BASIN SNOTEL | 9000 | 4/01/03 | 73 | 22.7 | 24.6 | 28.1 |
| CEDAR GROVE | 3760 | 3/25/03 | 25 | 8.7 | 14.2 | 11.4 |
| CHESSMAN RESERVOIR | 6200 | 3/31/03 | 7 | 2.1 | 2.4 | 3.5 |
| CHICKEN CREEK | 4060 | 3/25/03 | 40 | 13.6 | 16.9 | 15.2 |
| CLOVER MDW SNOTEL | 8800 | 4/01/03 | 54 | 16.7 | 14.1 | 18.0 |
| COLE CREEK SNOTEL | 7850 | 4/01/03 | 73 | 20.9 | 8.6 | 16.4 |
| COLLEY CREEK | 6300 | 4/01/03 | 30 | 8.5 | 6.8 | 7.9 |
| COMBINATION SNOTEL | 5600 | 4/01/03 | --- | 5.3 | 4.5 | 4.9 |
| COPPER BOTTOM SNOTEL | 5200 | 4/01/03 | 33 | 12.2 | 14.3 | 11.0 |
| COPPER CAMP SNOTEL | 6950 | 4/01/03 | 92 | 34.2 | 42.1 | 32.4 |
| COPPER CREEK | 5700 | 3/27/03 | 40 | 13.8 | 16.2 | 13.3 |
| COPPER MOUNTAIN | 7700 | 3/29/03 | 38 | 10.5 | 8.0 | 11.2 |
| COTTONWOOD CREEK | 6400 | 3/28/03 | 28 | 8.2 | 5.2 | 8.3 |
| COYOTE HILL | 4200 | 3/28/03 | 23 | 7.7 | 10.2 | 8.7 |
| CREVICE MOUNTAIN | 8400 | 3/30/03 | 37 | 9.4 | 10.4 | 10.8 |
| CRYSTAL LAKE SNOTEL | 6050 | 4/01/03 | --- | 14.0 | 11.5 | 12.3 |

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 71-00 |
|---|---|---|---|---|---|---|
| DAD CREEK LAKE | 8400 | 3/28/03 | 45 | 12.9 | 9.0 | 14.9 |
| DAISY PEAK SNOTEL | 7600 | 4/01/03 | --- | 10.7 | 9.9 | 11.0 |
| DALY CREEK SNOTEL | 5780 | 4/01/03 | 38 | 13.4 | 8.9 | 11.1 |
| DARKHORSE LK. SNOTEL | 8700 | 4/01/03 | 93 | 32.5 | 24.3 | 32.5 |
| DAVIS CREEK | 5400 | 3/27/03 | 70 | 22.4 | 26.7 | 24.2 |
| DEADMAN CR SNOTEL | 6450 | 4/01/03 | --- | 9.9 | 9.0 | 10.0 |
| DESERT MOUNTAIN | 5600 | 4/01/03 | 40 | 13.6 | 15.3 | 14.7 |
| DISCOVERY BASIN | 7050 | 3/26/03 | 38 | 12.0 | 6.7 | 10.4 |
| DIVIDE SNOTEL | 7800 | 4/01/03 | 32 | 8.8 | 7.8 | 11.3 |
| DIX HILL | 6400 | 3/29/03 | 35 | 12.8 | 10.3 | 10.3 |
| DUPUYER CREEK SNOTEL | 5750 | 4/01/03 | 15 | 6.3 | 8.6 | 9.9 |
| EAGLE CREEK | 7000 | 3/31/03 | 47 | 15.2 | 9.3 | 13.8 |
| EAST FORK R.S. | 5400 | 3/26/03 | 23 | 7.4 | 3.8 | 4.7 |
| EL DORADO MINE | 7800 | 3/31/03 | 63 | 22.2 | 14.0 | 20.2 |
| ELK HORN SPRINGS | 7800 | 3/28/03 | 36 | 11.3 | 7.0 | 9.1 |
| ELK PEAK | 8000 | 4/01/03 | 51 | 15.2 | 12.0 | 16.1 |
| EMERY CREEK SNOTEL | 4350 | 4/01/03 | --- | 14.0 | 15.2 | 15.3 |
| FATTY CREEK | 5500 | 3/29/03 | 69 | 21.0 | 23.6 | 24.3 |
| FISH CREEK | 8000 | 3/27/03 | 33 | 8.4 | 6.1 | 9.9 |
| FISHER CREEK SNOTEL | 9100 | 4/01/03 | 109 | 36.4 | 32.6 | 35.4 |
| FIVE-BULL | 5700 | 3/28/03 | 12 | 2.8 | 6.8 | 5.5 |
| FLATTOP MTN SNOTEL | 6300 | 4/01/03 | 120 | 41.8 | 51.1 | 45.1 |
| FLEECER RIDGE | 7500 | 3/27/03 | 33 | 10.8 | 9.5 | 10.9 |
| FOOLHEN | 8280 | 3/28/03 | 54 | 15.8 | 14.8 | 16.2 |
| FOREST LAKE | 6400 | 3/31/03 | 41 | 12.8 | 8.0 | 11.7 |
| FOUR MILE | 6900 | 3/24/03 | 23 | 7.0 | 5.6 | 8.4 |
| FOURTH OF JULY | 3450 | 3/26/03 | 14 | 3.5 | 9.6 | 7.4 |
| FRED BURR PASS | 8000 | 3/26/03 | 70 | 23.3 | 21.0 | 23.9 |
| FREIGHT CREEK | 6000 | 3/30/03 | 34 | 11.4 | 15.5 | 14.8 |
| FROHNER MDWS SNOTEL | 6480 | 4/01/03 | 28 | 8.9 | 6.3 | 8.0 |
| GARVER CREEK SNOTEL | 4250 | 4/01/03 | 24 | 9.0 | 10.6 | 9.9 |
| GIBBONS PASS | 7100 | 3/31/03 | 70 | 26.4 | 19.6 | 22.7 |
| GOAT MOUNTAIN | 7000 | 3/25/03 | 23 | 6.9 | 11.2 | 9.7 |
| GOLD CREEK LAKE | 7200 | 3/31/03 | 47 | 16.2 | 10.6 | 14.7 |
| GOLD STONE | 8100 | 3/26/03 | 57 | 17.5 | 11.7 | 16.9 |
| GRASSHOPPER | 7000 | 4/01/03 | 18 | 5.0 | 3.4 | 5.8 |
| GRAVE CRK SNOTEL | 4300 | 4/01/03 | --- | 15.2 | 17.1 | 15.6 |
| GRIFFIN CR DIVIDE | 5150 | 3/27/03 | 26 | 6.3 | 10.6 | 10.3 |
| GUNSIGHT LAKE | 6300 | 3/30/03 | 91 | 32.8 | 45.9 | 39.3 |
| HAND CREEK SNOTEL | 5030 | 4/01/03 | 29 | 9.4 | 11.8 | 11.7 |
| HAWKINS LAKE SNOTEL | 6450 | 4/01/03 | 68 | 23.5 | 30.8 | 27.4 |
| HAYMAKER | 8050 | 3/28/03 | 47 | 12.0 | 10.3 | 11.8 |
| HEART LAKE TRAIL | 4800 | 3/28/03 | 55 | 14.6 | 26.4 | 20.6 |
| HEBGEN DAM | 6550 | 3/26/03 | 30 | 8.2 | 9.3 | 12.0 |
| HELL ROARING DIVIDE | 5770 | 3/27/03 | 75 | 25.7 | 30.2 | 29.5 |
| HERRIG JUNCTION | 4850 | 3/25/03 | 73 | 23.8 | 30.1 | 26.0 |
| HOLBROOK | 4530 | 4/01/03 | 18 | 7.4 | 11.4 | 8.2 |
| HOODOO BASIN SNOTEL | 6050 | 4/01/03 | 118 | 39.6 | 55.4 | 45.3 |
| INDEPENDENCE | 7850 | 3/28/03 | 57 | 16.3 | 16.5 | 17.4 |
| INTERGAARD | 6450 | 3/30/03 | 20 | 6.8 | 4.8 | 7.7 |
| JAHNKE LAKE TRAIL | 7200 | 3/26/03 | 38 | 12.1 | 7.2 | 10.4 |
| JOHNSON PARK | 6450 | 3/28/03 | 22 | 6.7 | 6.0 | 5.5 |
| KEELER CREEK | 3300 | 3/25/03 | 29 | 9.9 | 21.2 | 11.5 |
| KINGS HILL | 7500 | 3/27/03 | 41 | 10.7 | 10.3 | 13.7 |
| KISHENEHN | 3890 | 3/30/03 | 19 | 5.8 | 11.2 | 6.8 |
| KRAFT CREEK SNOTEL | 4750 | 4/01/03 | --- | 12.3 | 15.5 | 14.1 |
| LAKE CREEK | 6100 | 3/26/03 | 14 | 4.7 | 6.0 | 8.2 |
| LAKEVIEW CANYON | 6930 | 3/28/03 | 22 | 6.1 | 7.6 | 11.1 |
| LAKEVIEW RDG. SNOTEL | 7400 | 4/01/03 | 25 | 7.9 | 9.6 | 11.8 |
| LEMHI RIDGE SNOTEL | 8100 | 4/01/03 | 45 | 13.4 | 8.4 | 11.2 |
| LICK CREEK SNOTEL | 6860 | 4/01/03 | 42 | 12.9 | 9.0 | 13.0 |
| LITTLE PARK | 7400 | 3/26/03 | 43 | 13.2 | 14.0 | 15.9 |
| LOGAN CREEK | 4300 | 3/26/03 | 17 | 4.6 | 7.5 | 6.7 |
| LONE MOUNTAIN SNOTEL | 8880 | 4/01/03 | 49 | 17.3 | 16.8 | 18.7 |

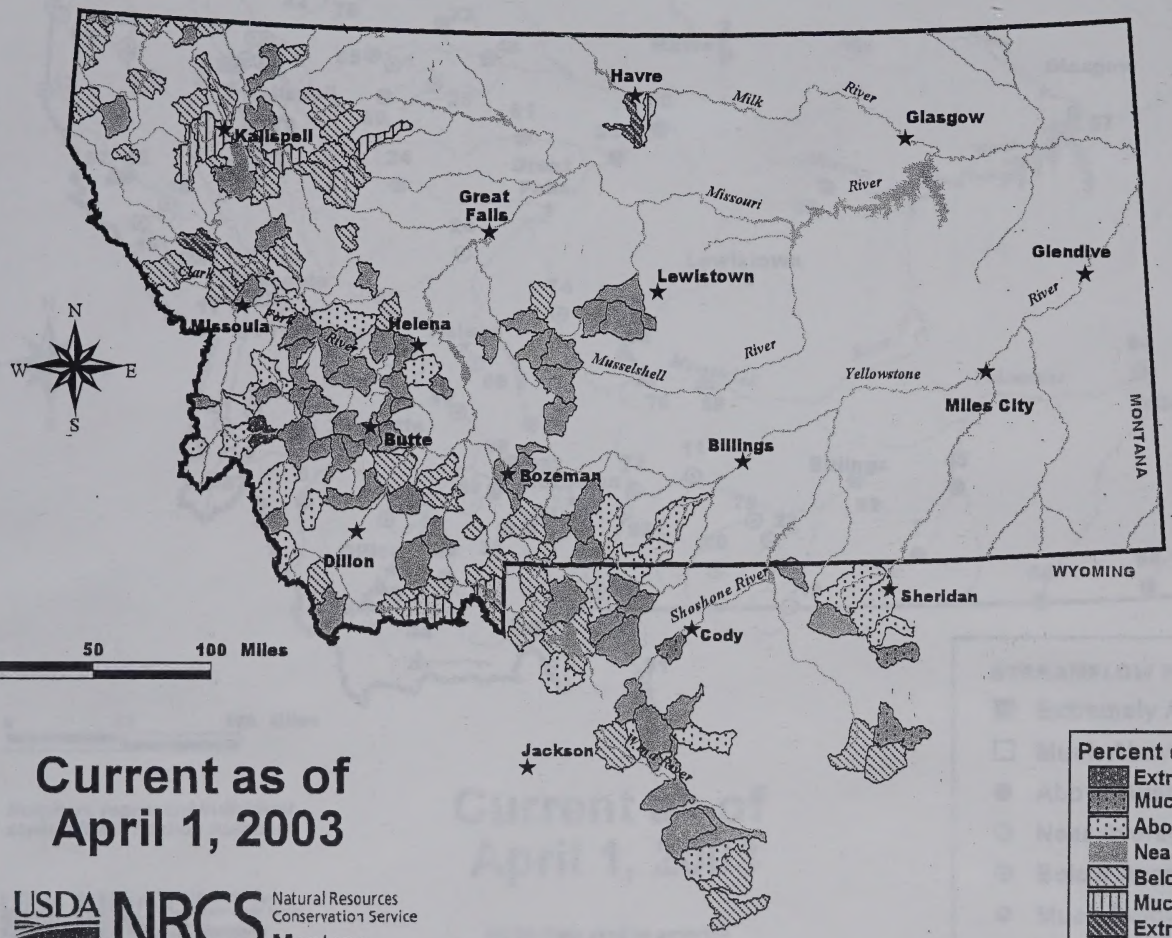
| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 71-00 |
|---|---|---|---|---|---|---|
| LOST HORSE | 5940 | 4/01/03 | --- | 30.6E | 27.2 | 30.7 |
| LOST SOUL | 4800 | 3/27/03 | 39 | 12.1 | 16.6 | 14.0 |
| LOWER TWIN SNOTEL | 7900 | 4/01/03 | 57 | 16.6 | 12.1 | 19.0 |
| LUBRECHT SNOTEL | 4680 | 4/01/03 | 13 | 5.2 | 5.4 | 3.6 |
| LUBRECHT FOREST NO 3 | 5450 | 3/27/03 | 21 | 5.8 | 5.8 | 5.7 |
| LUBRECHT FOREST NO 4 | 4650 | 3/27/03 | 6 | 1.6 | 2.6 | 1.3 |
| LUBRECHT FOREST NO 6 | 4040 | 3/27/03 | 5 | 1.6 | 2.4 | 1.6 |
| LUBRECHT HYDROPLOT | 4200 | 3/27/03 | 12 | 4.4 | 5.5 | 2.9 |
| MADISON PLT SNOTEL | 7750 | 4/01/03 | 56 | 18.8 | 21.7 | 25.5 |
| MANY GLACIER SNOTEL | 4900 | 4/01/03 | 33 | 11.8 | 21.5 | 15.3 |
| MARIAS PASS | 5250 | 3/27/03 | 36 | 13.2 | 22.3 | 16.8 |
| MIDDLE MILL CREEK | 7850 | 3/31/03 | 49 | 17.4 | 10.8 | 15.6 |
| MILL CREEK | 7500 | 4/01/03 | 45 | 13.6 | 12.4 | 12.6 |
| MINERAL CREEK | 4000 | 3/26/03 | 45 | 15.2 | 19.4 | 17.4 |
| MONUMENT PK SNOTEL | 8850 | 4/01/03 | 69 | 20.9 | 20.5 | 21.0 |
| MOSS PEAK SNOTEL | 6780 | 4/01/03 | 100 | 34.2 | 36.1 | 38.2 |
| MOULTON RESERVOIR | 6850 | 3/31/03 | 27 | 8.1 | 4.6 | 6.9 |
| MT LOCKHART SNOTEL | 6400 | 4/01/03 | 60 | 20.0 | 24.4 | 21.1 |
| MUDD LAKE | 7650 | 4/01/03 | 67 | 21.0 | 16.8 | 19.7 |
| MULE CREEK SNOTEL | 8300 | 4/01/03 | 56 | 17.2 | 12.7 | 15.8 |
| N.E. ENTRANCE SNOTEL | 7350 | 4/01/03 | --- | 11.2 | 7.7 | 11.3 |
| NEVADA RIDGE SNOTEL | 7020 | 4/01/03 | 56 | 18.3 | 13.6 | 15.5 |
| NEW WORLD | 6900 | 3/27/03 | 60 | 15.6 | 10.8 | 14.6 |
| NEWTON MOUNTAIN | 5600 | 3/26/03 | 79 | 28.0 | 36.3 | 33.9 |
| NEZ PERCE CMP SNOTEL | 5650 | 4/01/03 | --- | 17.8 | 15.1 | 14.7 |
| NEZ PERCE CREEK | 6600 | 3/29/03 | 21 | 6.7 | 4.8 | 6.5 |
| NEZ PERCE PASS | 6570 | 3/25/03 | 55 | 19.2 | 14.6 | 17.8 |
| N.F. ELK CR SNOTEL | 6250 | 4/01/03 | 46 | 14.1 | 11.0 | 12.4 |
| NF JOCKO SNOTEL | 6330 | 4/01/03 | 103 | 40.2 | 53.2 | 45.3 |
| NOISY BASIN SNOTEL | 6040 | 4/01/03 | 98 | 36.2 | 40.5 | 40.9 |
| NOTCH | 8500 | 3/28/03 | 55 | 16.1 | 12.4 | 16.7 |
| OPHIR PARK | 7150 | 3/29/03 | 52 | 16.8 | 12.3 | 16.7 |
| PALISADE CREEK | 8250 | 4/01/03 | --- | 31.7E | 30.4 | 29.8 |
| PETERSON MDW SNOTEL | 7200 | 4/01/03 | --- | 11.8 | 6.3 | 10.5 |
| PICKET PIN LOWER | 6200 | 3/27/03 | 23 | 4.8 | 3.3 | 2.6 |
| PICKET PIN MIDDLE | 7250 | 3/27/03 | 56 | 13.4 | 5.2 | 10.9 |
| PICKET PIN UPPER | 8100 | 4/01/03 | --- | 20.2E | 11.7 | 19.3 |
| PICKFOOT CRK SNOTEL | 6650 | 4/01/03 | --- | 10.4 | 8.9 | 11.7 |
| PIKE CREEK SNOTEL | 5930 | 4/01/03 | 60 | 21.7 | 30.6 | 27.5 |
| PIPESTONE PASS | 7200 | 3/29/03 | 16 | 4.2 | 2.9 | 5.7 |
| PLACER BASIN SNOTEL | 8830 | 4/01/03 | 66 | 19.3 | 14.5 | 17.8 |
| POORMAN CR SNOTEL | 5100 | 4/01/03 | 98 | 35.4 | 50.7 | 32.7 |
| PORCUPINE SNOTEL | 6500 | 4/01/03 | 20 | 6.9 | 5.7 | 6.9 |
| POTOMAGETON PARK | 7150 | 3/28/03 | 43 | 11.8 | 11.3 | 13.8 |
| RED MOUNTAIN | 6000 | 3/27/03 | 59 | 16.3 | 21.4 | 18.8 |
| RED TOP | 5260 | 3/26/03 | 70 | 22.3 | 28.6 | 28.4 |
| REVAIS CREEK | 4800 | 3/27/03 | 3 | .2 | 4.8 | 1.8 |
| ROCK CREEK | 5600 | 3/25/03 | 27 | 9.6 | 8.5 | 9.8 |
| ROCK CREEK MEADOW | 8160 | 3/27/03 | 64 | 17.7 | 16.0 | 20.7 |
| ROCKER PEAK SNOTEL | 8000 | 4/01/03 | 48 | 14.4 | 10.3 | 14.3 |
| ROCKY BOY SNOTEL | 4700 | 4/01/03 | 2 | .6 | 5.1 | 4.4 |
| SACAJAWEA | 6550 | 3/26/03 | 37 | 13.0 | 12.3 | 13.8 |
| SACAJAWEA SNOTEL | 6550 | 4/01/03 | 40 | 15.2 | 12.5 | 14.8 |
| SADDLE MTN SNOTEL | 7900 | 4/01/03 | 90 | 28.7 | 23.0 | 25.8 |
| S.F. SHIELDS SNOTEL | 8100 | 4/01/03 | --- | 16.5 | 13.7 | 17.7 |
| SHORT CREEK SNOTEL | 7000 | 4/01/03 | --- | 6.2 | 3.9 | 6.1 |
| SHOWER FALLS SNOTEL | 8100 | 4/01/03 | 72 | 21.6 | 18.1 | 22.7 |
| SKALKAHO SNOTEL | 7260 | 4/01/03 | 75 | 25.5 | 23.7 | 24.3 |
| SLAG-A-MELT LAKE | 8750 | 3/28/03 | 79 | 28.0 | 21.4 | 24.9 |
| SLEEPING WOMAN SNTL | 6150 | 4/01/03 | 46 | 14.9 | 18.5 | 17.2 |
| SLIDE ROCK MOUNTAIN | 7100 | 3/31/03 | 49 | 16.8 | 12.0 | 15.5 |
| SMUGGLER MINE | 6960 | 3/31/03 | 31 | 9.6 | 6.8 | 9.7 |
| SPOTTED BEAR MTN. | 7000 | 3/30/03 | 38 | 12.6 | 14.1 | 14.1 |
| SPUR PARK SNOTEL | 8100 | 4/01/03 | 69 | 21.1 | 19.1 | 21.5 |

| SNOW COURSE | ELEVATION | DATE | SNOW DEPTH | WATER CONTENT | LAST YEAR | AVERAGE 71-00 |
|---|---|---|---|---|---|---|
| STAHL PEAK SNOTEL | 6030 | 4/01/03 | --- | 33.1 | 41.5 | 35.3 |
| STEMPLE PASS | 6600 | 3/28/03 | 36 | 9.2 | 9.4 | 10.2 |
| STORM LAKE | 7780 | 3/26/03 | 46 | 12.9 | 9.7 | 13.3 |
| STRYKER BASIN | 6180 | 3/25/03 | 86 | 27.9 | 36.8 | 31.9 |
| STUART MOUNTAIN SNTL | 7400 | 4/01/03 | 94 | 31.9 | 35.0 | 34.2 |
| SUCKER CREEK | 3960 | 3/25/03 | 0 | .0 | 1.4 | .4 |
| TAYLOR ROAD | 4080 | 3/25/03 | 0 | .0 | 3.2 | 1.7 |
| TEN MILE LOWER | 6600 | 3/31/03 | 25 | 7.8 | 4.9 | 7.0 |
| TEN MILE MIDDLE | 6800 | 3/31/03 | 37 | 11.2 | 7.2 | 11.4 |
| TEPEE CREEK SNOTEL | 8000 | 4/01/03 | 37 | 10.6 | 12.3 | 13.5 |
| TIMBERLINE CREEK | 8850 | 3/31/03 | 64 | 15.7 | 9.9 | 14.2 |
| TIZER BASIN SNOTEL | 6840 | 4/01/03 | 29 | 9.4 | 9.2 | 10.3 |
| TRAIL CREEK | 7090 | 3/26/03 | 35 | 11.5 | 7.1 | 8.5 |
| TRINKUS LAKE | 6100 | 3/30/03 | 102 | 38.2 | 44.7 | 42.0 |
| TRUMAN CREEK | 4060 | 3/28/03 | 8 | 2.4 | 5.9 | 3.7 |
| TV MOUNTAIN | 6800 | 3/29/03 | 56 | 16.1 | 18.6 | 18.5 |
| TWELVEMILE SNOTEL | 5600 | 4/01/03 | 45 | 17.0 | 19.6 | 17.5 |
| TWENTY-ONE MILE | 7150 | 3/31/03 | 40 | 12.4 | 15.0 | 16.9 |
| TWIN CREEKS | 3580 | 3/30/03 | 19 | 6.7 | 11.6 | 9.6 |
| TWIN LAKES SNOTEL | 6400 | 4/01/03 | 109 | 45.0 | 46.2 | 39.7 |
| UPPER HOLLAND LAKE | 6200 | 3/30/03 | 97 | 35.3 | 38.7 | 34.6 |
| WALDRON SNOTEL | 5600 | 4/01/03 | 31 | 10.7 | 12.7 | 10.8 |
| WARM SPRINGS SNOTEL | 7800 | 4/01/03 | --- | 23.6 | 18.5 | 21.2 |
| WEASEL DIVIDE | 5450 | 3/31/03 | 71 | 26.7 | 40.0 | 32.9 |
| WEST YELL'ST SNOTEL | 6700 | 4/01/03 | --- | 6.5 | 10.3 | 12.8 |
| WHISKEY CREEK SNOTEL | 6800 | 4/01/03 | 36 | 11.2 | 15.1 | 17.4 |
| WHITE MILL SNOTEL | 8700 | 4/01/03 | 87 | 26.8 | 21.0 | 24.6 |
| WHITE PINE RIDGE | 8850 | 3/28/03 | 21 | 5.6 | 3.9 | 6.0 |
| WILLOW CREEK | 6500 | 3/26/03 | 32 | 9.2 | 4.4 | 8.1 |
| WOOD CREEK SNOTEL | 5960 | 4/01/03 | 20 | 8.1 | 10.6 | 10.0 |
| WRONG CREEK | 5700 | 3/27/03 | 33 | 10.4 | 12.6 | 12.3 |
| WRONG RIDGE | 6800 | 3/27/03 | 47 | 14.3 | 15.8 | 18.0 |

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

# Mountain Snow Water Equivalent




**Current as of April 1, 2003**

USDA NRCS Natural Resources Conservation Service Montana

http://www.mt.nrcs.usda.gov

**Percent of Average by Sub-Basin**

- Extremely Above Average (Over 150)
- Much Above Average (131 - 150)
- Above Average (111 - 130)
- Near Average (91 - 110)
- Below Average (71 - 90)
- Much Below Average (51 - 70)
- Extremely Below Average (Below 51)

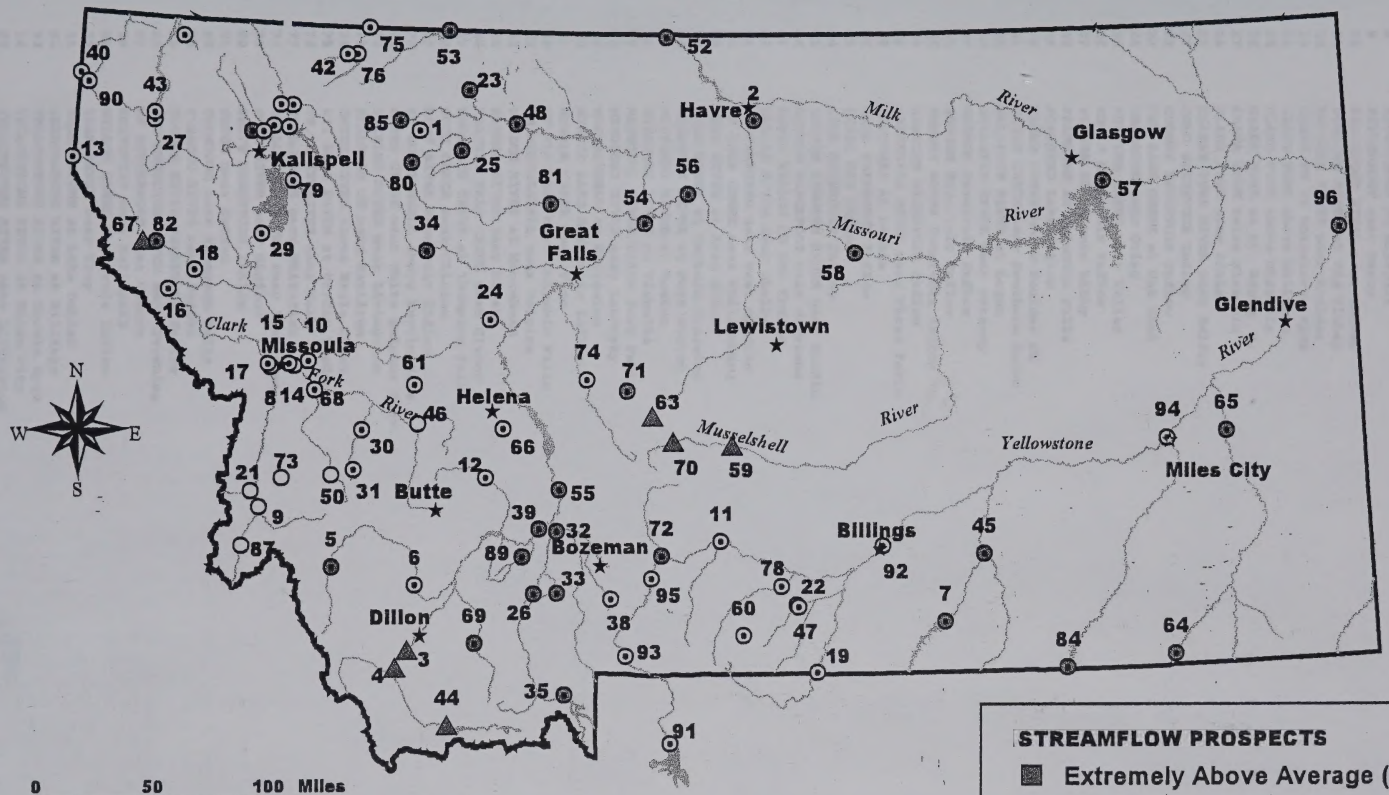
**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

Mountain Snow Assistant
Edmonton
Calgary
Red Deer
Lethbridge
Medicine Hat
Grande Prairie
Fort McMurray
Jasper
Banff
Lake Louise
Waterton
Drumheller
Cypress Hills
Dinosaur Provincial Park
Writing-on-Stone Provincial Park
Elk Island National Park
Wood Buffalo National Park
Waterton Lakes National Park
Banff National Park
Jasper National Park
Kootenay National Park
Yoho National Park
Glacier National Park
Mount Revelstoke National Park
Rocky Mountain House
Hinton
Edson
Whitecourt
Peace River
Slave Lake
Athabasca
Wainwright
Vermilion
Lloydminster
Camrose
Drumheller
Stettler
Olds
Didsbury
Three Hills
Strathmore
Brooks
Taber
Coaldale
Fort Macleod
Pincher Creek
Crowsnest Pass
Canmore
Cochrane
Okotoks
High River
Claresholm
Nanton
Vulcan
Chestermere
Airdrie
Sundre
Rocky Mountain House
Hinton
Edson
Whitecourt
Peace River
Slave Lake
Athabasca
Wainwright
Vermilion
Lloydminster
Camrose
Drumheller
Stettler
Olds
Didsbury
Three Hills
Strathmore
Brooks
Taber
Coaldale
Fort Macleod
Pincher Creek
Crowsnest Pass
Canmore
Cochrane
Okotoks
High River
Claresholm
Nanton
Vulcan
Chestermere
Airdrie
Sundre

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

# Streamflow Prospects for Montana




**STREAMFLOW PROSPECTS**

- Extremely Above Average (Over150)
- Much Above Average (131 - 150)
- Above Average (111 - 130)
- Near Average (91 - 110)
- Below Average (71 - 90)
- Much Below Average (51 - 70)
- Extremely Below Average (Below 51)
- No Data

*Numbers represent individual station identification numbers.*

## Current as of April 1, 2003

**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

USDA NRCS Natural Resources Conservation Service Montana

http://www.mt.nrcs.usda.gov

| Map # | Forecast Point |
|---|---|
| 1 | BADGER CREEK near Browning |
| 2 | BEAVER CREEK near Havre |
| 3 | BEAVERHEAD RIVER at Barretts |
| 4 | CLARK CANYON RES Inflow |
| 5 | BIG HOLE RIVER at Wisdom |
| 6 | BIG HOLE RIVER near Melrose |
| 7 | BIGHORN RIVER near St. Xavier |
| 8 | BITTERROOT at Missoula |
| 9 | BITTERROOT near Darby |
| 10 | BLACKFOOT RIVER near Bonner |
| 11 | BOULDER RIVER at Big Timber |
| 12 | BOULDER RIVER near Boulder |
| 13 | CLARK FK at Whitehorse Rpds |
| 14 | CLARK FORK above Milltown |
| 15 | CLARK FORK above Missoula |
| 16 | CLARK FORK at St. Regis |
| 17 | CLARK FORK below Missoula |
| 18 | CLARK FORK near Plains |
| 19 | CLARKS FORK RIVER near Belfry |
| 21 | COMO RESERVOIR Inflow |
| 22 | COONEY RESERVOIR Inflow |
| 23 | CUT BANK CREEK at Cut Bank |
| 24 | DEARBORN near Craig |
| 25 | DUPUYER CREEK near Valier |
| 26 | ENNIS Reservoir Inflow |
| 27 | FISHER RIVER near Libby |
| 28 | FLATHEAD at Columbia Falls |
| 29 | FLATHEAD Lake Inflow |
| 30 | FLINT CREEK below Boulder Ck |
| 31 | FLINT CREEK near Southern Cross |
| 32 | GALLATIN RIVER at Logan |
| 33 | GALLATIN RIVER near Gateway |
| 34 | GIBSON Reservoir Inflow |
| 35 | HEBGEN Reservoir Inflow |
| 36 | HUNGRY HORSE Reservoir Inflow |
| 38 | HYALITE RESERVOIR Inflow |
| 39 | JEFFERSON RIVER near Three Forks |
| 40 | KOOTENAI at Leonia |
| 42 | LAKE SHERBURNE Inflow |
| 43 | LIBBY RES Inflow |
| 44 | LIMA RESERVOIR Inflow |
| 45 | LITTLE BIGHORN RIVER near Hardin |
| 46 | LITTLE BLACKFOOT near Garrison |
| 47 | LOWER WILLOW CK RES Inflow |
| 48 | MARIAS RIVER near Shelby |
| 49 | MF FLATHEAD near West Glacier |
| 50 | MF ROCK CREEK near Philipsburg |
| 52 | MILK RIVER at East Cross. |
| 53 | MILK RIVER at Western Crossing |
| 54 | MISSOURI RIVER at Fort Benton |
| 55 | MISSOURI RIVER at Toston |
| 56 | MISSOURI RIVER at Virgelle |
| 57 | MISSOURI RIVER below Fort Peck |
| 58 | MISSOURI RIVER near Landusky |
| 59 | MUSSELSHELL at Harlowton |
| 60 | MYSTIC LAKE Reservoir Inflow |
| 61 | NEVADA CREEK near Finn |
| 62 | NF FLATHEAD near Columbia Falls |
| 63 | NF MUSSELSHELL near Delpine |
| 64 | POWDER RIVER at Moorehead |
| 65 | POWDER RIVER near Locate |
| 66 | PRICKLY PEAR CREEK near Clancy |
| 67 | PROSPECT CREEK at Thompson Falls |
| 68 | ROCK CREEK near Clinton |
| 69 | RUBY RIVER Reservoir Inflow |
| 70 | SF MUSSELSHELL above Martinsdale |
| 71 | SHEEP CREEK near White Sulphur Spgs. |
| 72 | SHIELDS RIVER near Livingston |
| 73 | SKALKAHO CK near Hamilton |
| 74 | SMITH RIVER above Eagle Creek |
| 75 | ST. MARY RIVER at US/CAN Border |
| 76 | ST. MARY RIVER near Babb |
| 77 | STILLWATER near Whitefish |
| 78 | STILLWATER RIVER near Absarokee |
| 79 | SWAN RIVER near Bigfork |
| 80 | SWIFT RESERVOIR Inflow |
| 81 | TETON near Dutton |
| 82 | THOMPSON near Thompson Falls |
| 83 | TOBACCO RIVER near Eureka |
| 84 | TONGUE RIVER RESERVOIR Inflow |
| 85 | TWO MEDICINE RIVER near Browning |
| 87 | WF BITTERROOT near Conner |
| 88 | WHITEFISH near Kalispell |
| 89 | WILLOW CREEK Reservoir Inflow |
| 90 | YAAK RIVER near Troy |
| 91 | YELLOWSTONE at Lake Outlet |
| 92 | YELLOWSTONE RIVER at Billings |
| 93 | YELLOWSTONE RIVER at Corwin Spgs |
| 94 | YELLOWSTONE RIVER at Miles City |
| 95 | YELLOWSTONE RIVER near Livingston |
| 96 | YELLOWSTONE RIVER near Sidney |

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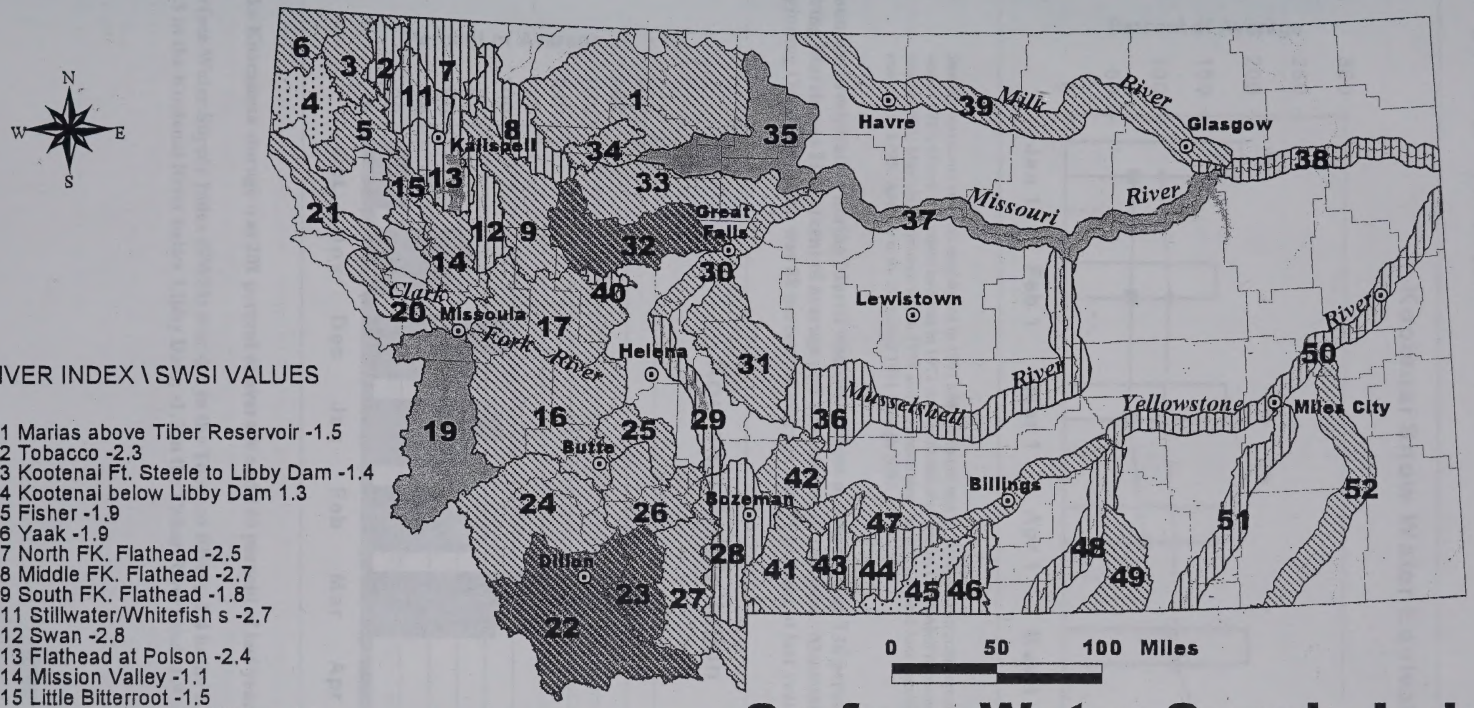
NATURAL RESOURCES CONSERVATION SERVICE




RIVER INDEX \ SWSI VALUES

1 Marias above Tiber Reservoir -1.5
2 Tobacco -2.3
3 Kootenai Ft. Steele to Libby Dam -1.4
4 Kootenai below Libby Dam 1.3
5 Fisher -1.9
6 Yaak -1.9
7 North FK. Flathead -2.5
8 Middle FK. Flathead -2.7
9 South FK. Flathead -1.8
11 Stillwater/Whitefish s -2.7
12 Swan -2.8
13 Flathead at Polson -2.4
14 Mission Valley -1.1
15 Little Bitterroot -1.5
16 Clark Fork above Milltown -1.3
17 Blackfoot -1.8
19 Bitterroot 0.3
20 Clark Fork below Bitterroot -1
21 Clark Fork below Flathead -1.9
22 Beaverhead -4
23 Ruby -3
24 Big Hole -1.7
25 Boulder (Jefferson) -1.2
26 Jefferson -1.4
27 Madison -1.6
28 Gallatin -2.1
29 Missouri above Canyon Ferry -2.4
30 Missouri below Canyon Ferry -1.7
31 Smith -1.3
32 Sun -3.5
33 Teton -1.3
34 Birch/Dupuyer Creeks -1.3
35 Marias 0.1
36 Musselshell -2.7
37 Missouri above Fort Peck -0.3
38 Missouri below Fort Peck -2.8
39 Milk -1.1
40 Dearborn near Craig -2
41 Yellowstone above Livingston -1.3
42 Shields -1.6
43 Boulder (Yellowstone) -2.5
44 Stillwater -2.4
45 Rock/Red Lodge Creeks 1.2
46 Clarks Fork -2
47 Yellowstone above Bighorn -1.7
48 Bighorn below Bighorn Lake -2.9
49 Little Bighorn -1.8
50 Yellowstone below Bighorn -2.9
51 Tongue -2.3
52 Powder -1.7

# Surface Water Supply Index (SWSI) Values

SWSI VALUES

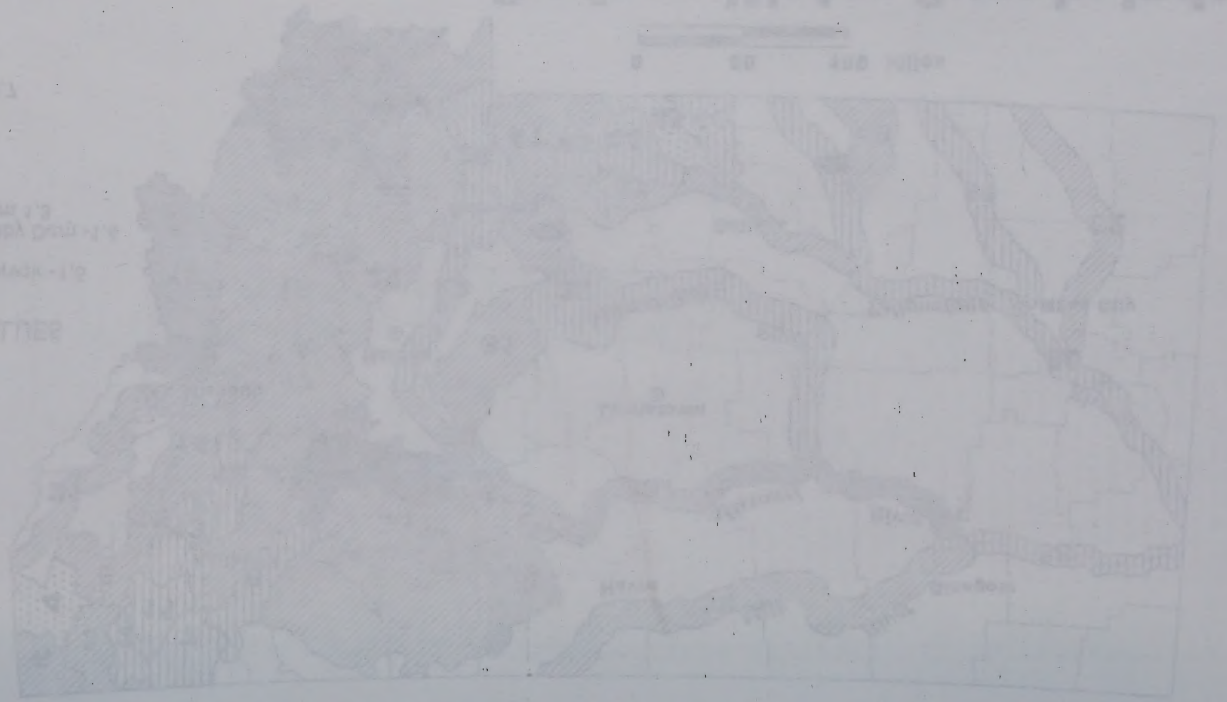
- Extremely Dry -4.0 to -3.0
- Moderately Dry -2.9 to -2.0
- Slightly Dry -1.9 to -1.0
- Near Average -0.9 to 0.9
- Sightly Wet 1.0 to 1.9
- Moderately Wet 2.0 to 2.9
- Extremely Wet 3.0 to 4.0
- SWSI Not Applicable

**NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.**

## Current as of April 1, 2003

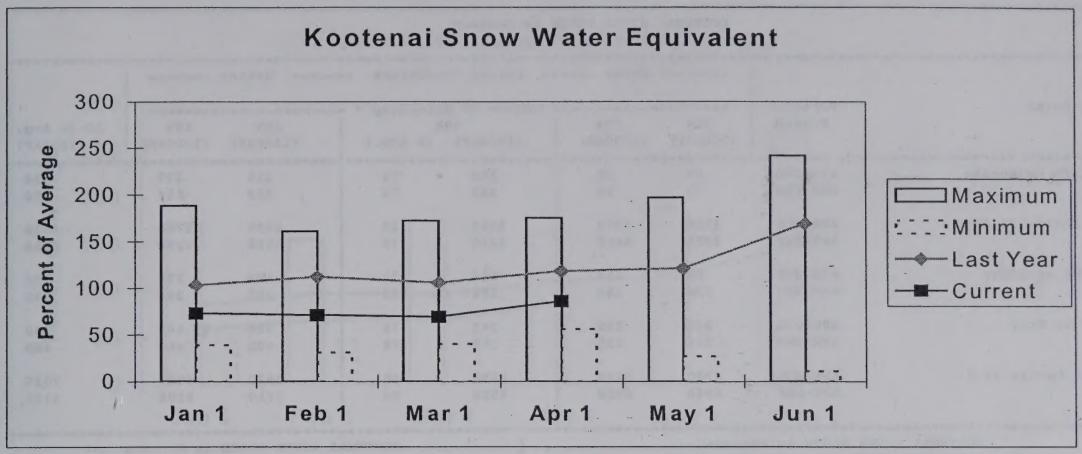
USDA NRCS Natural Resources Conservation Service Montana

http://www.mt.nrcs.usda.gov



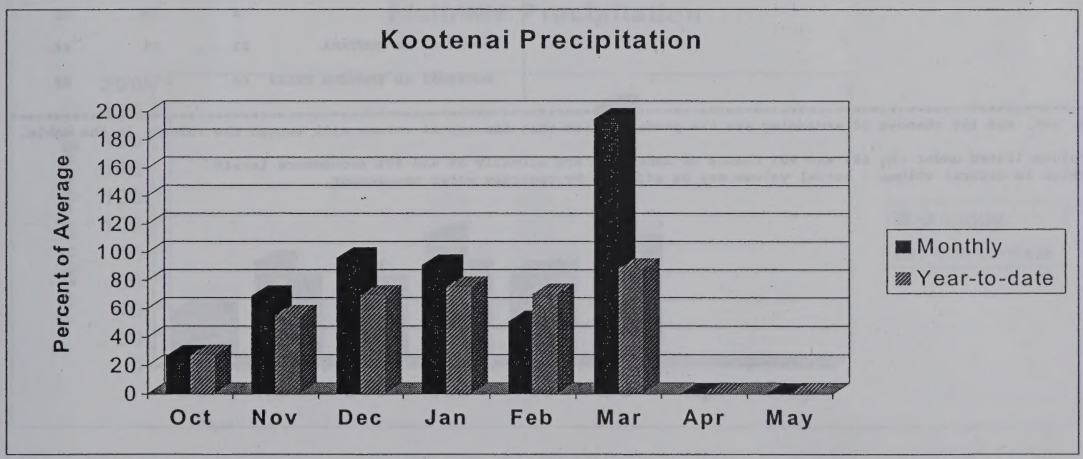
# Kootenai River Basin in Montana

**Snowpack conditions in the Kootenai River Basin were below above average. Snow water content was 86 percent of average and 73 percent of last year.**




January maximum swe was established in 1997 and minimum was in 1977; February maximum swe was in 1997 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1974 and minimum swe was in 2001; May maximum swe was in 1974 and minimum swe was in 1977; and June maximum swe was in 1974 and minimum swe was in 1992. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 194 percent of average and 136 percent of last year. Valley precipitation during March was 215 percent of average and 129 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 88 percent of average and 71 percent of last year.**




**Lake Koocanusa storage was 201 percent of average and 140 percent of last year.**

**Surface Water Supply Index (SWSI) was -2.3 in the Tobacco River; -1.4 in the Kootenai Ft. Steele to Libby Dam; +1.3 in the Kootenai River below Libby Dam; -1.9 in the Fisher River; and -1.9 in the Yaak River.**

KOOTENAI RIVER BASIN in Montana
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| TOBACCO RIVER nr Eureka | APR-JUL | 63 | 85 | 100 | 74 | 115 | 137 | 136 |
| | APR-SEP | 70 | 95 | 112 | 75 | 129 | 154 | 150 |
| LIBBY RES Inflow (1,2) | APR-JUL | 3180 | 4070 | 4480 | 80 | 4890 | 5780 | 5638 |
| | APR-SEP | 3970 | 4860 | 5270 | 79 | 5680 | 6570 | 6638 |
| FISHER RIVER nr Libby | APR-JUL | 99 | 138 | 164 | 71 | 189 | 229 | 230 |
| | APR-SEP | 110 | 150 | 178 | 73 | 208 | 248 | 245 |
| YAAK RIVER nr Troy | APR-JUL | 245 | 305 | 345 | 78 | 385 | 445 | 440 |
| | APR-SEP | 255 | 315 | 360 | 78 | 405 | 465 | 460 |
| KOOTENAI at Leonia (1,2) | APR-JUL | 4740 | 5370 | 5650 | 80 | 5930 | 6560 | 7035 |
| | APR-SEP | 4940 | 6030 | 6520 | 80 | 7010 | 8100 | 8125 |

KOOTENAI RIVER BASIN in Montana
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| LAKE KOOCANUSA | 5748.0 | 3512.0 | 2508.0 | 1743.7 |

KOOTENAI RIVER BASIN in Montana
Watershed Snowpack Analysis - April 1, 2003

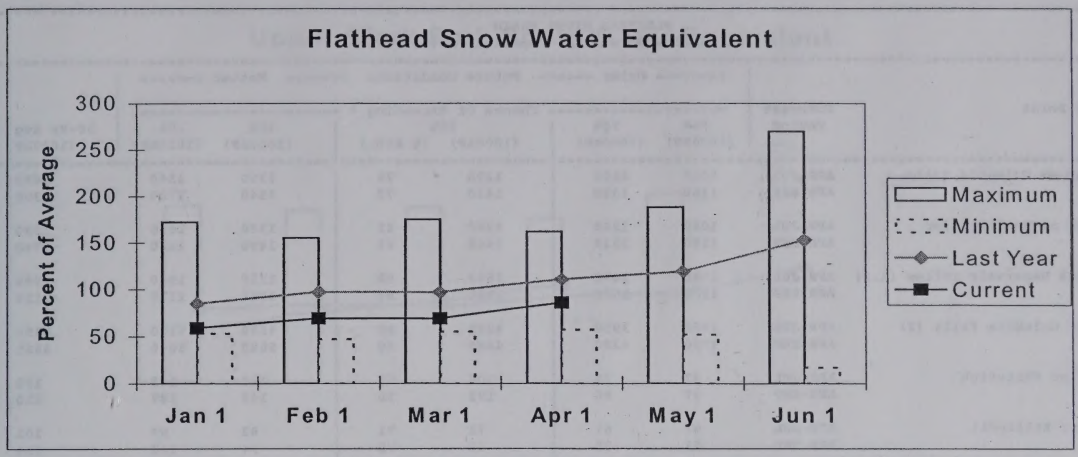
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| KOOTENAY in CANADA | 17 | 74 | 79 |
| KOOTENAI MAINTSTEM | 8 | 70 | 93 |
| TOBACCO | 3 | 76 | 89 |
| FISHER | 5 | 75 | 79 |
| YAAK | 8 | 74 | 81 |
| KOOTENAI in MONTANA | 23 | 73 | 86 |
| KOOTENAI ab BONNERS FERRY | 40 | 73 | 83 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

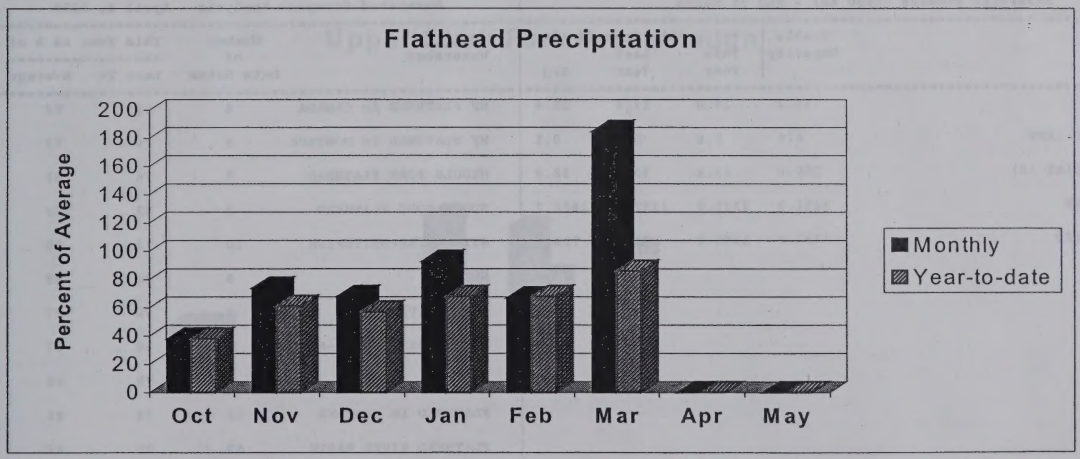
## Flathead River Basin

**Snowpack conditions in the Flathead River Basin were below average. Snow water content was 86 percent of average and 77 percent of last year.**




January maximum swe was established in 1997 and minimum was in 2001; February maximum swe was in 1972 and minimum was in 2001; March maximum swe was in 1972 and minimum was in 2001; April maximum swe was in 1972 and minimum was in 2001; May maximum swe was in 1972 and minimum was in 1992; and June maximum swe was in 1974 and minimum was in 1992. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 186 percent of average and 137 percent of last year. Valley precipitation during March was 169 percent of average and 115 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 86 percent of average and 78 percent of last year.**




**Combined Camas reservoir storage was 75 percent of average and 142 percent of last year; Lower Jocko Lake was 0 percent of average and 0 percent of last year; combined Mission Valley reservoir storage was 76 percent of average and 96 percent of last year; Hungry Horse storage was 125 percent of average and 100 percent of last year; and Flathead Lake storage was 155 percent of average and 163 percent of last year.**

**Surface Water Supply Index (SWSI) was -2.5 in the North Fork Flathead River; -2.7 in the Middle Fork Flathead River; -1.8 in the South Fork Flathead River; -2.5 in the Flathead River at Columbia Falls; -2.7 in the Stillwater/Whitefish Rivers; -2.8 in the Swan River; -2.4 in the Flathead River at Polson; -1.1 in the Mission Valley; and -1.5 in the Little Bitterroot River.**

FLATHEAD RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| NF FLATHEAD nr Columbia Falls | APR-JUL | 1040 | 1190 | 1290 | 79 | 1390 | 1540 | 1630 |
| | APR-SEP | 1160 | 1320 | 1430 | 79 | 1540 | 1700 | 1800 |
| MF FLATHEAD nr West Glacier | APR-JUL | 1080 | 1200 | 1280 | 81 | 1360 | 1480 | 1590 |
| | APR-SEP | 1180 | 1310 | 1400 | 81 | 1490 | 1620 | 1740 |
| HUNGRY HORSE Reservoir Inflow (1,2) | APR-JUL | 1240 | 1490 | 1600 | 80 | 1710 | 1960 | 1994 |
| | APR-SEP | 1270 | 1570 | 1710 | 81 | 1850 | 2150 | 2124 |
| FLATHEAD at Columbia Falls (2) | APR-JUL | 3460 | 3950 | 4290 | 80 | 4630 | 5120 | 5355 |
| | APR-SEP | 3700 | 4280 | 4680 | 80 | 5080 | 5660 | 5825 |
| STILLWATER nr Whitefish | APR-JUL | 47 | 82 | 106 | 55 | 130 | 165 | 192 |
| | APR-SEP | 57 | 96 | 122 | 58 | 148 | 187 | 210 |
| WHITEFISH nr Kalispell | APR-JUL | 47 | 62 | 72 | 71 | 82 | 97 | 101 |
| | APR-SEP | 53 | 70 | 82 | 72 | 94 | 111 | 114 |
| ASHLEY CREEK nr Marion (2) | APR-JUL | 1.95 | 3.41 | 4.40 | 61 | 5.40 | 6.90 | 7.19 |
| | APRIL | | | 2.20 | 82 | | | 2.68 |
| SWAN RIVER nr Bigfork | APR-JUL | 320 | 385 | 430 | 76 | 475 | 540 | 565 |
| | APR-SEP | 370 | 435 | 480 | 74 | 525 | 590 | 645 |
| FLATHEAD Lake Inflow (1,2) | APR-JUL | 4030 | 4700 | 5010 | 81 | 5320 | 5990 | 6200 |
| | APR-SEP | 4060 | 5010 | 5440 | 81 | 5870 | 6820 | 6713 |

FLATHEAD RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| CAMAS (4) | 45.2 | 19.0 | 13.4 | 25.4 |
| LOWER JOCKO LAKE | 6.4 | 0.0 | 0.0 | 0.1 |
| MISSION VALLEY (8) | 100.0 | 29.4 | 30.5 | 38.8 |
| HUNGRY HORSE | 3451.0 | 2355.0 | 2357.0 | 1886.7 |
| FLATHEAD LAKE | 1791.0 | 1145.0 | 701.4 | 738.5 |

FLATHEAD RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

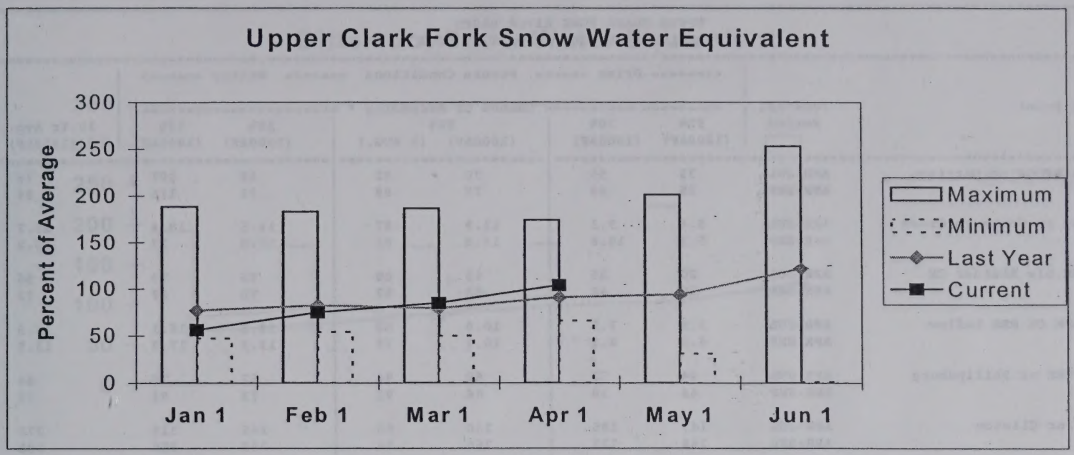
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| NF FLATHEAD in CANADA | 4 | 69 | 79 |
| NF FLATHEAD in MONTANA | 9 | 76 | 89 |
| MIDDLE FORK FLATHEAD | 7 | 76 | 86 |
| SOUTH FORK FLATHEAD | 9 | 82 | 89 |
| STILLWATER-WHITEFISH | 10 | 73 | 80 |
| SWAN | 9 | 86 | 89 |
| MISSION VALLEY | 5 | 90 | 87 |
| LITTLE BITTERROOT-ASHLEY | 6 | 56 | 67 |
| JOCKO | 5 | 79 | 88 |
| FLATHEAD in MONTANA | 43 | 78 | 86 |
| FLATHEAD RIVER BASIN | 47 | 77 | 86 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

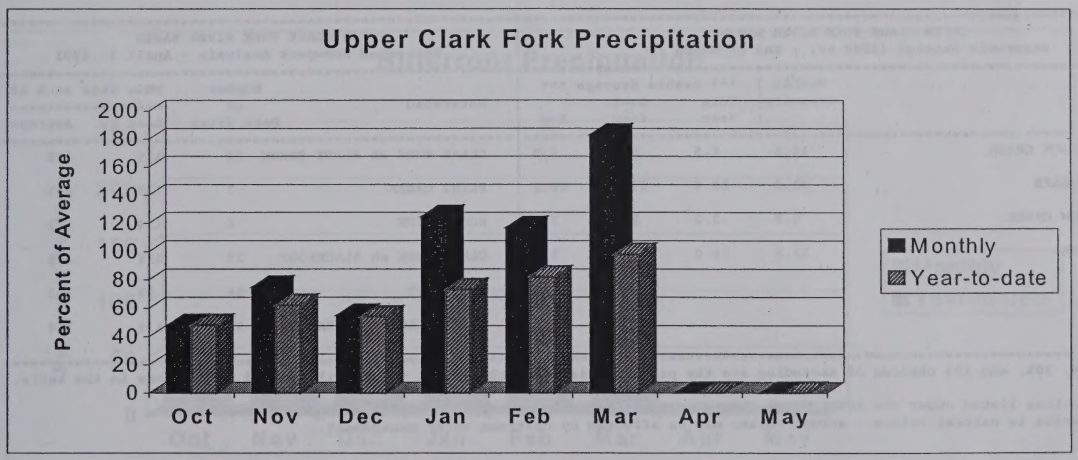
## Upper Clark Fork River Basin

**Snowpack conditions in the Upper Clark Fork River Basin were near average. Snow water content was 104 percent of average and 114 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1977; February maximum was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum was in 1994; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum swe was in 1975 and minimum swe was in 1987. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 184 percent of average and 135 percent of last year. Valley precipitation during March was 168 percent of average and 135 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 98 percent of average and 101 percent of last year.**




**East Fork Rock Creek storage was 66 percent of average and 112 percent of last year; Georgetown Lake was 113 percent of average and 106 percent of last year; Lower Willow Creek was 119 percent of average and 152 percent of last year; and Nevada Creek storage was 132 percent of average and 156 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.3 in the Clark Fork River above Milltown; and -1.8 in the Blackfoot River.**

UPPER CLARK FORK RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| LITTLE BLACKFOOT nr Garrison | APR-JUL | 33 | 55 | 70 | 92 | 85 | 107 | 76 |
| | APR-SEP | 35 | 59 | 75 | 89 | 91 | 115 | 84 |
| FLINT CREEK nr Southern Cross | APR-JUL | 5.4 | 9.3 | 11.9 | 87 | 14.5 | 18.4 | 13.7 |
| | APR-SEP | 5.8 | 10.6 | 13.8 | 85 | 17.0 | 22 | 16.2 |
| FLINT CREEK blw Boulder Ck | APR-JUL | 20 | 35 | 45 | 80 | 55 | 70 | 56 |
| | APR-SEP | 29 | 46 | 58 | 82 | 70 | 87 | 71 |
| LOWER WILLOW CK RES Inflow | APR-JUL | 3.9 | 7.5 | 10.0 | 80 | 12.5 | 16.1 | 12.5 |
| | APR-SEP | 4.3 | 8.1 | 10.7 | 79 | 13.3 | 17.2 | 13.5 |
| MF ROCK CREEK nr Philipsburg | APR-JUL | 44 | 53 | 60 | 94 | 67 | 76 | 64 |
| | APR-SEP | 48 | 59 | 66 | 92 | 73 | 84 | 72 |
| ROCK CREEK nr Clinton | APR-JUL | 147 | 195 | 230 | 85 | 265 | 315 | 270 |
| | APR-SEP | 168 | 225 | 260 | 85 | 295 | 350 | 305 |
| CLARK FORK abv Milltown | APR-JUL | 260 | 415 | 515 | 85 | 615 | 770 | 605 |
| | APR-SEP | 315 | 485 | 600 | 85 | 715 | 885 | 705 |
| NEVADA CREEK nr Finn | APR-JUL | 4.4 | 9.5 | 13.0 | 75 | 16.5 | 22 | 17.3 |
| | APR-SEP | 5.3 | 10.7 | 14.4 | 76 | 18.1 | 24 | 18.9 |
| BLACKFOOT RIVER nr Bonner | APR-JUL | 425 | 545 | 630 | 78 | 715 | 835 | 805 |
| | APR-SEP | 480 | 610 | 700 | 79 | 790 | 920 | 892 |
| CLARK FORK abv Missoula | APR-JUL | 820 | 1010 | 1140 | 81 | 1270 | 1460 | 1415 |
| | APR-SEP | 945 | 1160 | 1300 | 82 | 1440 | 1650 | 1595 |

UPPER CLARK FORK RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| EAST FORK ROCK CREEK | 15.6 | 6.5 | 5.8 | 9.9 |
| GEORGETOWN LAKE | 31.0 | 29.6 | 27.8 | 26.2 |
| LOWER WILLOW CREEK | 4.9 | 3.2 | 2.1 | 2.7 |
| NEVADA CREEK | 12.6 | 10.0 | 6.4 | 7.6 |

UPPER CLARK FORK RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

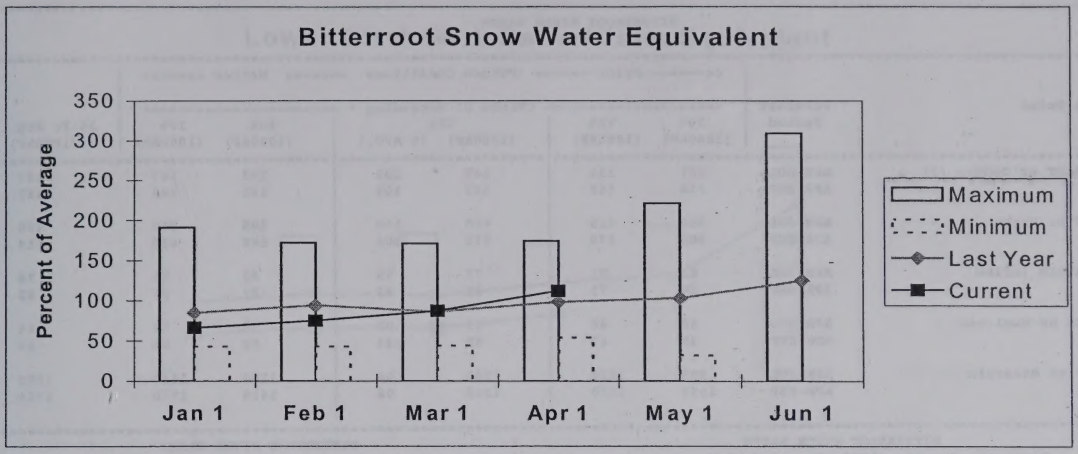
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| CLARK FORK ab FLINT CREEK | 16 | 139 | 105 |
| FLINT CREEK | 7 | 137 | 102 |
| ROCK CREEK | 6 | 124 | 109 |
| CLARK FORK ab BLACKFOOT | 25 | 135 | 106 |
| BLACKFOOT | 16 | 92 | 102 |
| UPPER CLARK FORK BASIN | 39 | 114 | 104 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

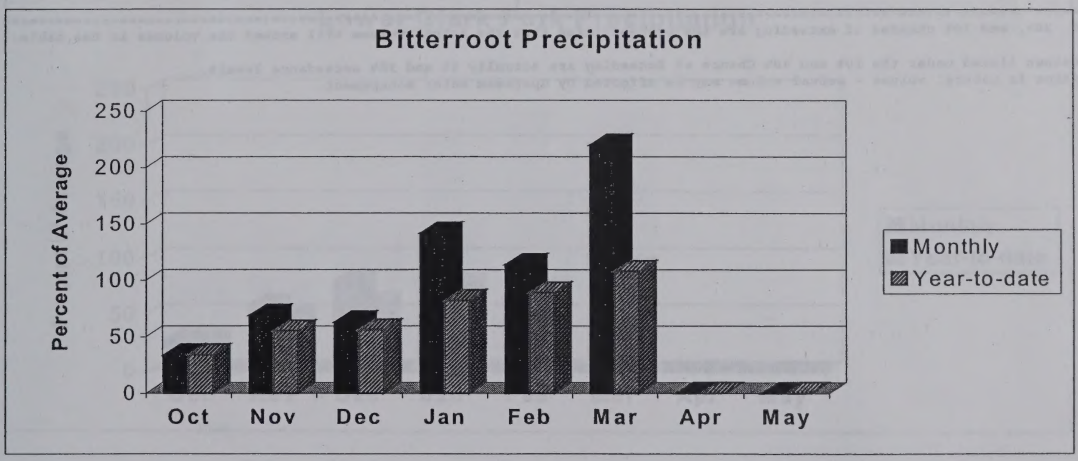
## Bitterroot River Basin

**Snowpack conditions in the Bitterroot River Basin were above average. Snow water content was 112 percent of average and 114 percent of last year.**




January maximum swe was established in 1997 and minimum swe in 1977; February maximum swe was in 1972 and minimum was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 2001; May maximum swe was in 1972 and minimum swe was in 1987; and June maximum swe was 1972 and 1974 and minimum swe was in 1987, 1992, 1994, and 2001. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 219 percent of average and 168 percent of last year. Valley precipitation during March was 230 percent of average and 213 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 108 percent of average and 107 percent of last year.**




**Painted Rocks Lake storage was 121 percent of average and 193 percent of last year and Como storage was 85 percent of average and 105 percent of last year.**

**Surface Water Supply Index (SWSI) was +0.3 in the Bitterroot River.**

BITTERROOT RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| WF BITTERROOT nr Conner (2) | APR-JUL | 107 | 131 | 147 | 103 | 163 | 187 | 143 |
| | APR-SEP | 116 | 143 | 162 | 103 | 181 | 208 | 157 |
| BITTERROOT nr Darby | APR-JUL | 350 | 415 | 460 | 100 | 505 | 570 | 460 |
| | APR-SEP | 400 | 470 | 515 | 100 | 560 | 630 | 514 |
| COMO RESERVOIR Inflow | APR-JUL | 63 | 71 | 77 | 99 | 83 | 91 | 78 |
| | APR-SEP | 66 | 75 | 81 | 99 | 87 | 96 | 82 |
| SKALKAHO CK nr Hamilton | APR-JUL | 33 | 40 | 45 | 102 | 50 | 57 | 44 |
| | APR-SEP | 39 | 47 | 52 | 104 | 57 | 65 | 50 |
| BITTERROOT at Missoula | APR-JUL | 995 | 1120 | 1200 | 96 | 1280 | 1410 | 1250 |
| | APR-SEP | 1090 | 1220 | 1310 | 96 | 1400 | 1530 | 1364 |

BITTERROOT RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| PAINTED ROCKS LAKE | 31.7 | 11.6 | 6.0 | 9.6 |
| COMO | 34.9 | 13.1 | 12.5 | 15.5 |

BITTERROOT RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

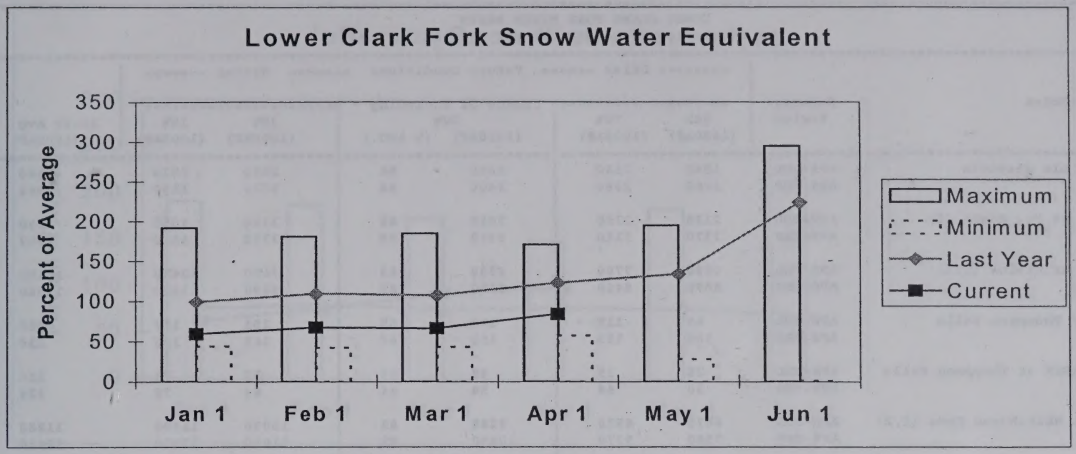
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| WEST FORK BITTERROOT | 3 | 125 | 113 |
| EAST SIDE BITTERROOT | 6 | 131 | 116 |
| WEST SIDE BITTERROOT | 4 | 100 | 107 |
| BITTERROOT RIVER BASIN | 12 | 114 | 112 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

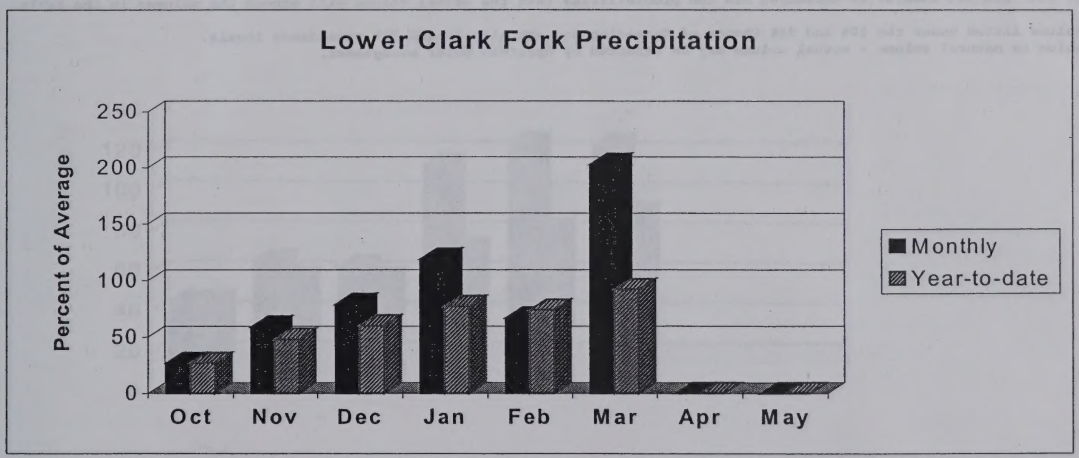
## Lower Clark Fork River Basin

**Snowpack conditions in the Lower Clark Fork River Basin were below average. Snow water content was 84 percent of average and 69 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1977; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum swe was in 1981; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum swe was in 1974 and minimum swe was in 1977. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 207 percent of average and 119 percent of last year. Valley precipitation during March was 173 percent of average and 90 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 92 percent of average and 75 percent of last year.**




**Noxon Rapids storage was 120 percent of average and 100 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.0 in the Clark Fork River below Bitterroot River and -1.9 in the Clark Fork River below Flathead River.**

LOWER CLARK FORK RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| CLARK FORK blw Missoula | APR-JUL | 1840 | 2130 | 2330 | 88 | 2530 | 2820 | 2660 |
| | APR-SEP | 2060 | 2380 | 2600 | 88 | 2820 | 3140 | 2962 |
| CLARK FORK at St. Regis (1) | APR-JUL | 2130 | 2790 | 3090 | 88 | 3390 | 4050 | 3520 |
| | APR-SEP | 2370 | 3110 | 3440 | 88 | 3770 | 4510 | 3907 |
| CLARK FORK nr Plains (1,2) | APR-JUL | 6280 | 7700 | 8350 | 83 | 9000 | 10420 | 10100 |
| | APR-SEP | 6890 | 8460 | 9170 | 83 | 9880 | 11450 | 11060 |
| THOMPSON nr Thompson Falls | APR-JUL | 89 | 115 | 133 | 65 | 151 | 177 | 205 |
| | APR-SEP | 106 | 133 | 151 | 66 | 169 | 196 | 230 |
| PROSPECT CREEK at Thompson Falls | APR-JUL | 25 | 39 | 48 | 41 | 57 | 71 | 116 |
| | APR-SEP | 30 | 44 | 54 | 44 | 64 | 78 | 124 |
| CLARK FK at Whitehorse Rpds (1,2) | APR-JUL | 6870 | 8530 | 9280 | 82 | 10030 | 11690 | 11280 |
| | APR-SEP | 7550 | 9370 | 10200 | 82 | 11030 | 12850 | 12460 |

LOWER CLARK FORK RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| NOXON RAPIDS | 335.0 | 327.2 | 325.9 | 272.9 |

LOWER CLARK FORK RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

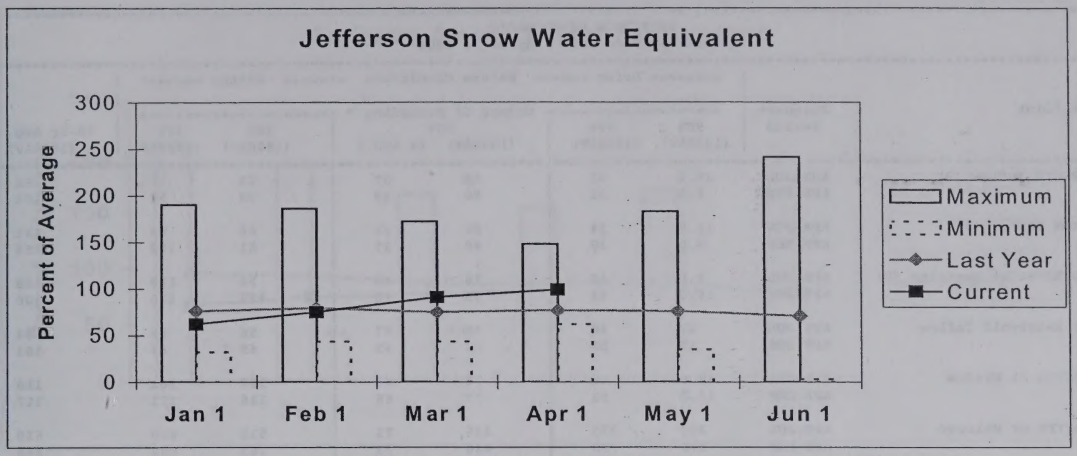
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| LOWER CLARK FORK BASIN | 14 | 69 | 84 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

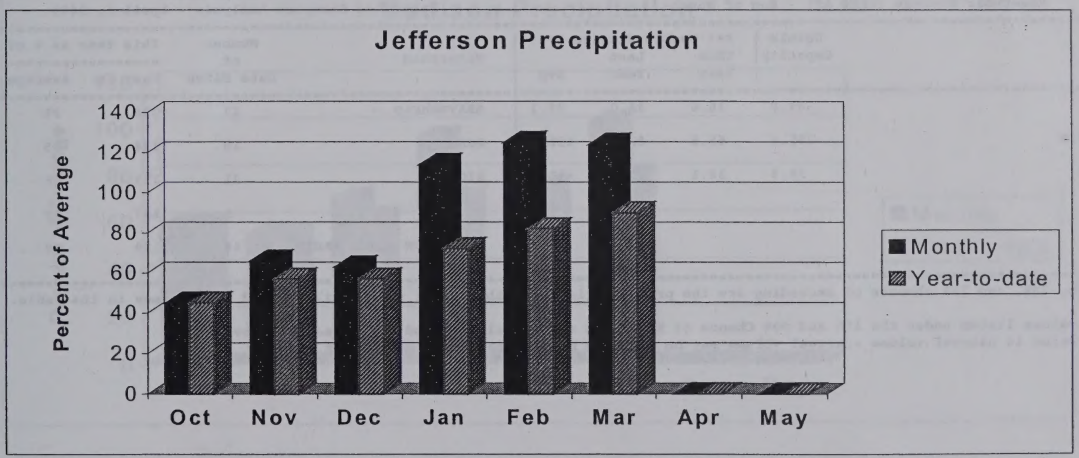
## Jefferson River Basin

**Snowpack conditions in the Jefferson River Basin were average. Snow water content was 99 percent of average and 129 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1977; February maximum swe was in 1997 and minimum was in 1977; March maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1997 and minimum was in 1977; May maximum swe was in 1975 and minimum swe was in 1977; and June maximum swe was in 1982 and minimum in 1987. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 130 percent of average and 168 percent of last year. Valley precipitation during March was 73 percent of average and 109 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 90 percent of average and 110 percent of last year.**




**Lima storage was 42 percent of average and 104 percent of last year; Clark Canyon storage was 43 percent of average and 79 percent of last year; and Ruby River storage was 102 percent of average and 118 percent of last year.**

**Surface Water Supply Index (SWSI) was -4.0 in the Beaverhead River; -3.0 in the Ruby River; -1.7 in the Big Hole River; -1.2 in the Boulder River; and -1.4 in the Jefferson River as a whole.**

JEFFERSON RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| LIMA RESERVOIR Inflow (2) | APR-JUL | 10.0 | 33 | 48 | 50 | 63 | 86 | 96 |
| | APR-SEP | 6.0 | 32 | 50 | 48 | 68 | 94 | 104 |
| CLARK CANYON Inflow (2) | APR-JUL | 11.0 | 34 | 50 | 38 | 66 | 89 | 131 |
| | APR-SEP | 8.0 | 39 | 60 | 39 | 81 | 112 | 156 |
| BEAVERHEAD RIVER at Barretts (2) | APR-JUL | 2.0 | 42 | 70 | 42 | 98 | 138 | 168 |
| | APR-SEP | 15.0 | 63 | 95 | 48 | 127 | 175 | 200 |
| RUBY RIVER Reservoir Inflow | APR-JUL | 27 | 40 | 48 | 57 | 56 | 69 | 84 |
| | APR-SEP | 37 | 51 | 60 | 59 | 69 | 83 | 101 |
| BIG HOLE RIVER at Wisdom | APR-JUL | 12.0 | 46 | 70 | 64 | 107 | 161 | 110 |
| | APR-SEP | 14.0 | 52 | 77 | 66 | 116 | 171 | 117 |
| BIG HOLE RIVER nr Melrose | APR-JUL | 240 | 355 | 435 | 71 | 515 | 630 | 610 |
| | APR-SEP | 270 | 395 | 480 | 73 | 565 | 690 | 660 |
| BOULDER RIVER nr Boulder | APR-JUL | 15.0 | 42 | 60 | 77 | 78 | 105 | 78 |
| | APR-SEP | 16.0 | 45 | 65 | 77 | 85 | 114 | 85 |
| WILLOW CREEK Reservoir Inflow | APR-JUL | 3.7 | 7.7 | 10.4 | 58 | 15.0 | 22 | 17.9 |
| | APR-SEP | 4.1 | 8.8 | 12.0 | 60 | 17.4 | 25 | 20 |
| JEFFERSON RIVER nr Three Forks (2) | APR-JUL | 205 | 365 | 475 | 61 | 585 | 745 | 780 |
| | APR-SEP | 235 | 405 | 520 | 61 | 635 | 805 | 860 |

JEFFERSON RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| LIMA | 84.0 | 16.6 | 16.0 | 39.1 |
| CLARK CANYON | 255.6 | 65.5 | 82.8 | 152.0 |
| RUBY RIVER | 38.8 | 32.1 | 27.1 | 31.5 |

JEFFERSON RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

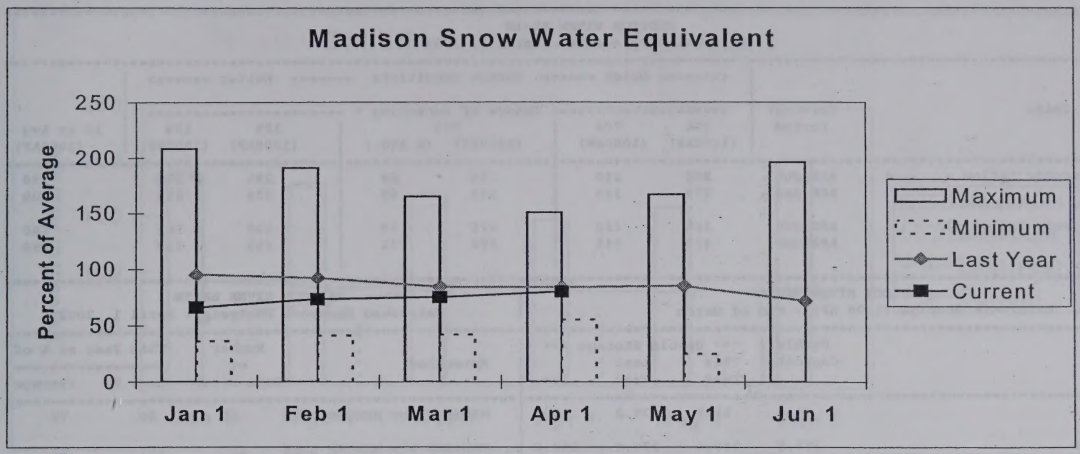
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| BEAVERHEAD | 17 | 128 | 95 |
| RUBY | 10 | 134 | 95 |
| BIGHOLE | 21 | 129 | 106 |
| BOULDER | 9 | 147 | 99 |
| JEFFERSON RIVER BASIN | 48 | 129 | 99 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

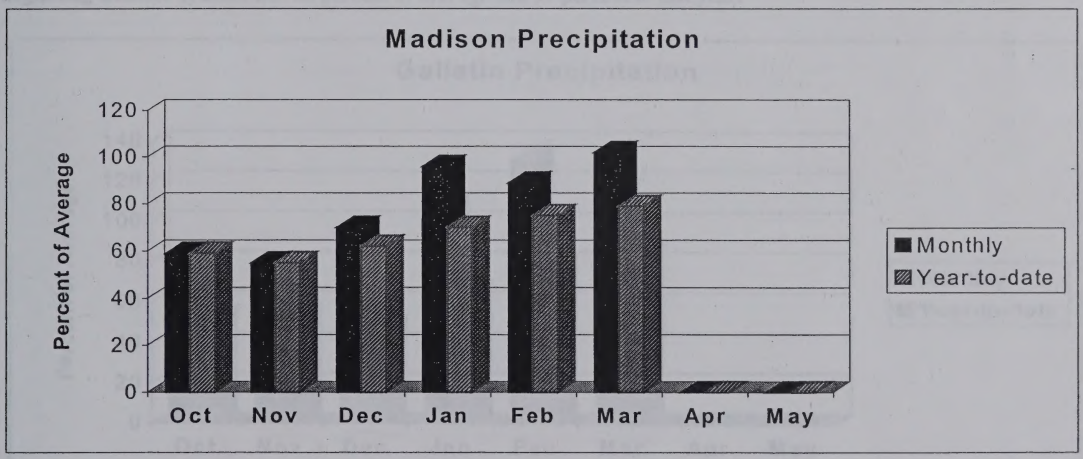
## Madison River Basin

**Snowpack conditions in the Madison River Basin were below average. Snow water content was 80 percent of average and 97 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1977; February maximum swe was in 1997 and minimum was in 1977; March maximum swe was in 1997 and minimum was in 1977; April maximum swe was in 1997 and minimum was in 1977; May maximum swe was in 1997 and minimum swe was in 1977; and June maximum swe was in 1995 and minimum in 2001. Average is for the period 1971 through 2000.

**Mountain and valley precipitation during March was 102 percent of average and 136 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 79 percent of average and 90 percent of last year.**




**Ennis Lake storage was 96 percent of average and 102 percent of last year and Hebgen Lake storage was 108 percent of average and 100 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.6 for the Madison River.**

MADISON RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| HEBGEN Reservoir Inflow | APR-JUL | 200 | 240 | 265 | 68 | 290 | 330 | 390 |
| | APR-SEP | 270 | 315 | 345 | 69 | 375 | 420 | 500 |
| ENNIS Reservoir Inflow (2) | APR-JUL | 365 | 430 | 475 | 70 | 520 | 585 | 680 |
| | APR-SEP | 470 | 545 | 600 | 71 | 655 | 730 | 850 |

MADISON RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| ENNIS LAKE | 41.0 | 29.9 | 29.2 | 31.2 |
| HEBGEN LAKE | 377.5 | 280.4 | 279.9 | 259.6 |

MADISON RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

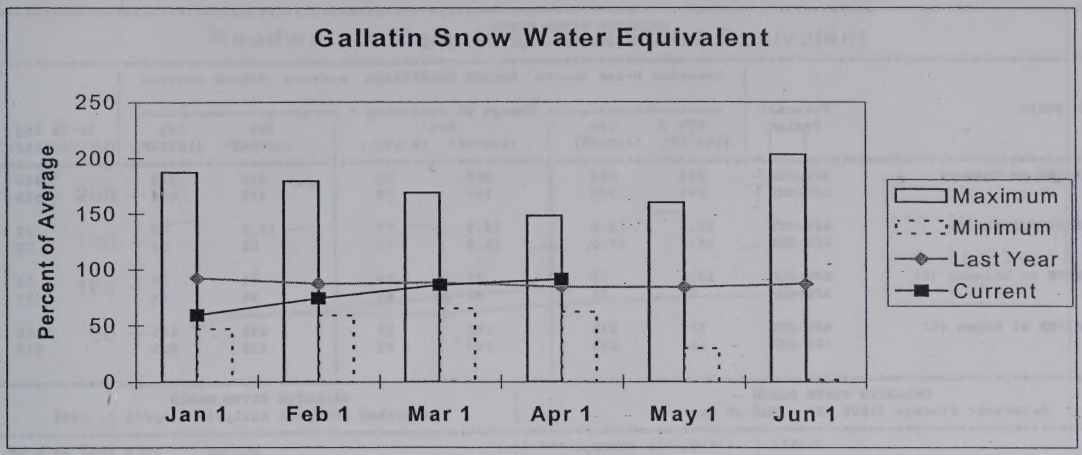
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| MADISON abv HEBGEN LAKE | 5 | 80 | 72 |
| MADISON blw HEBGEN LAKE | 12 | 107 | 84 |
| MADISON RIVER BASIN | 17 | 97 | 80 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

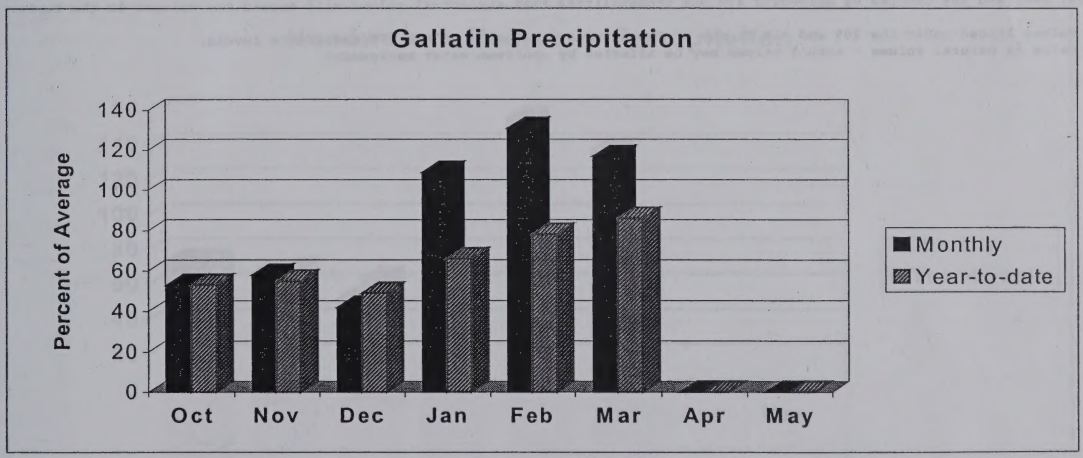
## Gallatin River Basin

**Snowpack conditions in the Gallatin River Basin were below average. Snow water content was 91 percent of average and 108 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1966; February maximum swe was in 1997 and minimum was in 1977; March maximum swe was in 1997 and minimum was in 1977; April maximum swe was in 1997 and minimum was in 2001; May maximum swe was in 1970 and minimum swe was in 1987; and June maximum swe was in 1975 and minimum in 2001. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 118 percent of average and 190 percent of last year. Valley precipitation during March was 94 percent of average and 229 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 86 percent of average and 99 percent of last year.**




**Middle Creek storage was 136 percent of average and 96 percent of last year.**

**Surface Water Supply Index (SWSI) was -2.1 for the Gallatin River.**

GALLATIN RIVER BASIN
Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| GALLATIN RIVER nr Gateway | APR-JUL | 220 | 265 | 300 | 68 | 335 | 380 | 440 |
| | APR-SEP | 265 | 320 | 360 | 70 | 400 | 455 | 515 |
| HYALITE RESERVOIR Inflow | APR-JUL | 12.2 | 15.0 | 16.9 | 77 | 19.1 | 22 | 22 |
| | APR-SEP | 14.0 | 17.0 | 19.0 | 76 | 21 | 24 | 25 |
| HYALITE CREEK nr Bozeman (2) | APR-JUL | 18.0 | 23 | 27 | 79 | 31 | 36 | 34 |
| | APR-SEP | 22 | 28 | 32 | 82 | 36 | 42 | 39 |
| GALLATIN RIVER at Logan (2) | APR-JUL | 114 | 215 | 280 | 57 | 345 | 445 | 495 |
| | APR-SEP | 154 | 265 | 340 | 60 | 415 | 525 | 570 |

GALLATIN RIVER BASIN
Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| MIDDLE CREEK | 10.2 | 6.4 | 6.7 | 4.7 |

GALLATIN RIVER BASIN
Watershed Snowpack Analysis - April 1, 2003

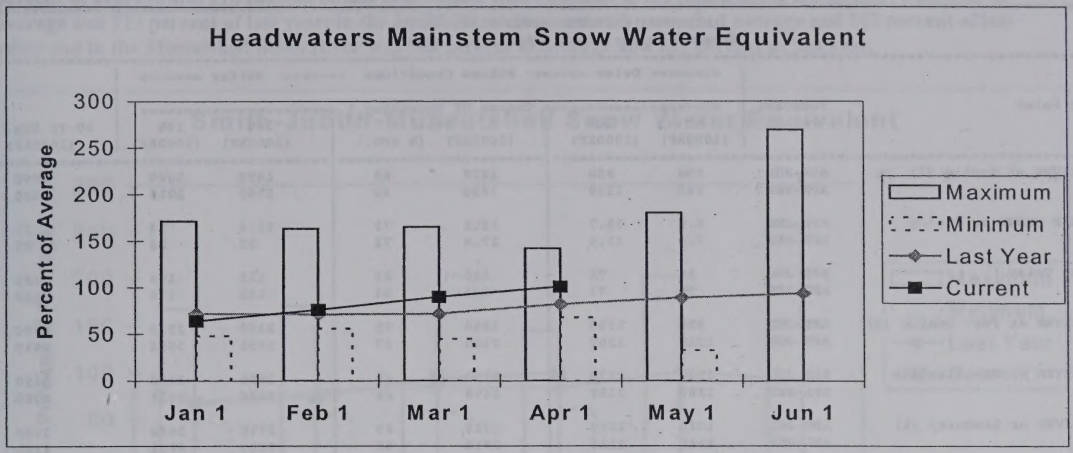
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| UPPER GALLATIN | 7 | 97 | 84 |
| HYALITE | 4 | 130 | 99 |
| BRIDGER | 3 | 115 | 101 |
| GALLATIN RIVER BASIN | 14 | 108 | 91 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

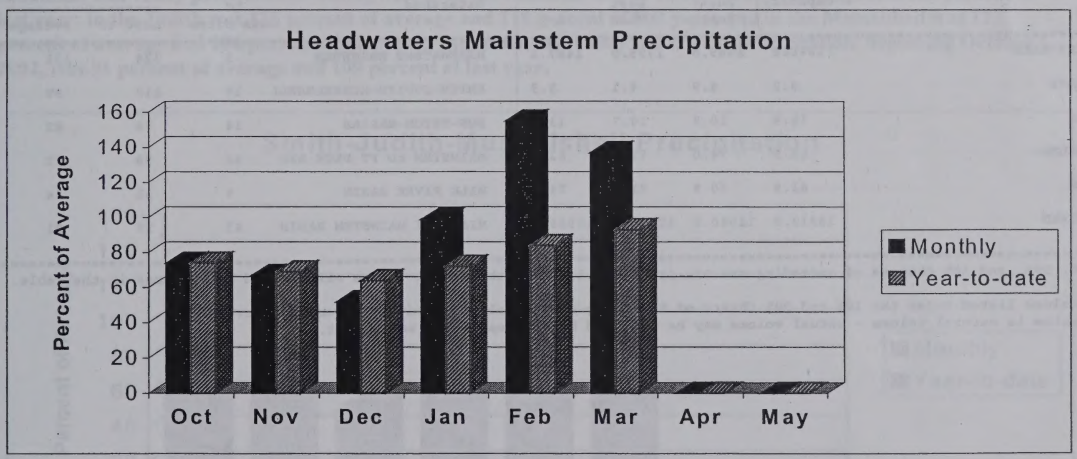
## Missouri Mainstem River Basin

**Snowpack conditions in the Headwaters Missouri Mainstem River Basin were average. Snow water content was 101 percent of average and 124 percent of last year.**




January maximum swe was established in 1997 and minimum swe in 1977; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 1961 and 1966; May maximum swe was in 1975 and minimum swe was in 1977; and June maximum swe was in 1975 and minimum swe was in 1992. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 145 percent of average and 129 percent of last year. Valley precipitation during March was 127 percent of average and 139 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 93 percent of average and 120 percent of last year.**




**Canyon Ferry Lake storage was 108 percent of average and 114 percent of last year; Helena Valley storage was 126 percent of average and 120 percent of last year; Lake Helena storage was 83 percent of average and 102 percent of last year; Hauser & Helena storage was 118 percent of average and 101 percent of last year; Holter Lake storage was 109 percent of average and 99 percent of last year; and Fort Peck Lake storage was 74 percent of average and 92 percent of last year.**

**Surface Water Supply Index (SWSI) was -2.4 in the Missouri River above Canyon Ferry; -1.7 in the Missouri River below Canyon Ferry; -0.3 in the Missouri River above Fort Peck; and -2.8 in the Missouri River below Fort Peck.**

## MISSOURI MAINSTEM RIVER BASIN
### Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| MISSOURI RIVER at Toston (2) | APR-JUL | 550 | 950 | 1220 | 60 | 1490 | 1890 | 2050 |
| | APR-SEP | 645 | 1110 | 1430 | 60 | 1750 | 2210 | 2390 |
| PRICKLY PEAR CREEK nr Clancy | APR-JUL | 6.5 | 11.7 | 15.3 | 73 | 18.4 | 24 | 21 |
| | APR-SEP | 7.4 | 13.6 | 17.8 | 71 | 22 | 28 | 25 |
| DEARBORN nr Craig | APR-JUL | 31 | 72 | 100 | 83 | 128 | 169 | 121 |
| | APR-SEP | 35 | 77 | 105 | 84 | 133 | 175 | 125 |
| MISSOURI RIVER at Fort Benton (2) | APR-JUL | 970 | 1550 | 1950 | 65 | 2350 | 2930 | 2990 |
| | APR-SEP | 1211 | 1907 | 2380 | 67 | 2851 | 3551 | 3570 |
| MISSOURI RIVER at Virgelle (2) | APR-JUL | 1100 | 1770 | 2230 | 65 | 2690 | 3360 | 3450 |
| | APR-SEP | 1360 | 2152 | 2690 | 66 | 3226 | 4021 | 4060 |
| MISSOURI RIVER nr Landusky (2) | APR-JUL | 1010 | 1730 | 2220 | 60 | 2710 | 3430 | 3690 |
| | APR-SEP | 1285 | 2134 | 2710 | 62 | 3286 | 4131 | 4350 |
| MISSOURI RIVER below Fort Peck (2) | APR-JUL | 1190 | 1910 | 2410 | 64 | 2910 | 3630 | 3740 |
| | APR-SEP | 1352 | 2196 | 2770 | 64 | 3346 | 4191 | 4330 |
| LAKE SAKAKAWEA Inflow (2) | APR-JUL | 2820 | 4720 | 6010 | 62 | 7300 | 9200 | 9740 |
| | APR-SEP | 3172 | 5356 | 6840 | 61 | 8321 | 10511 | 11200 |

## MISSOURI MAINSTEM RIVER BASIN
### Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| CANYON FERRY LAKE | 2043.0 | 1589.0 | 1395.0 | 1467.8 |
| HELENA VALLEY | 9.2 | 4.9 | 4.1 | 3.9 |
| LAKE HELENA | 10.4 | 10.9 | 10.7 | 13.1 |
| HAUSER & HELENA | 61.9 | 74.0 | 73.1 | 62.8 |
| HOLTER LAKE | 81.9 | 80.8 | 81.4 | 74.1 |
| FORT PECK LAKE | 18910.0 | 11040.0 | 12020.0 | 14966.0 |

## MISSOURI MAINSTEM RIVER BASIN
### Watershed Snowpack Analysis - April 1, 2003

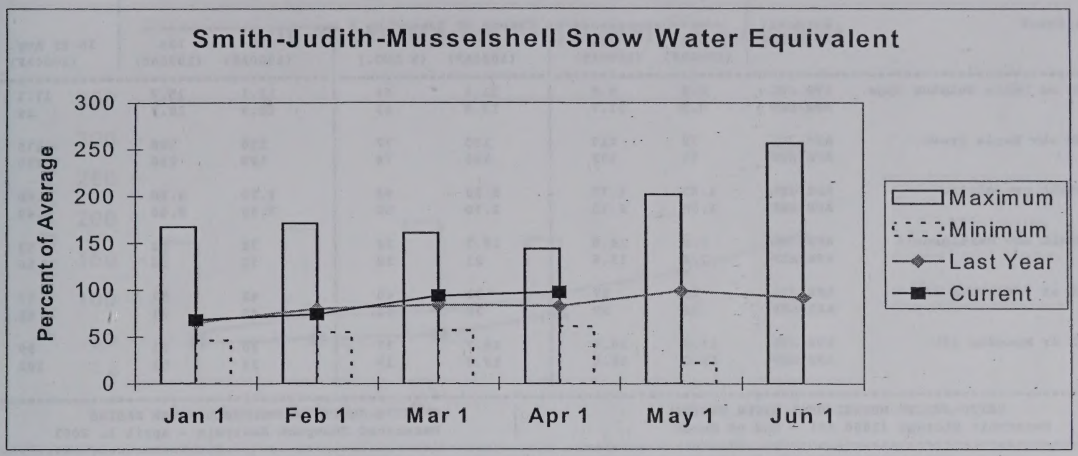
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| HEADWATERS MAINSTEM | 9 | 124 | 101 |
| SMITH-JUDITH-MUSSELSHELL | 18 | 118 | 98 |
| SUN-TETON-MARIAS | 14 | 74 | 82 |
| MAINSTEM ab FT PECK RES | 40 | 98 | 92 |
| MILK RIVER BASIN | 4 | 31 | 34 |
| MISSOURI MAINSTEM BASIN | 43 | 97 | 91 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

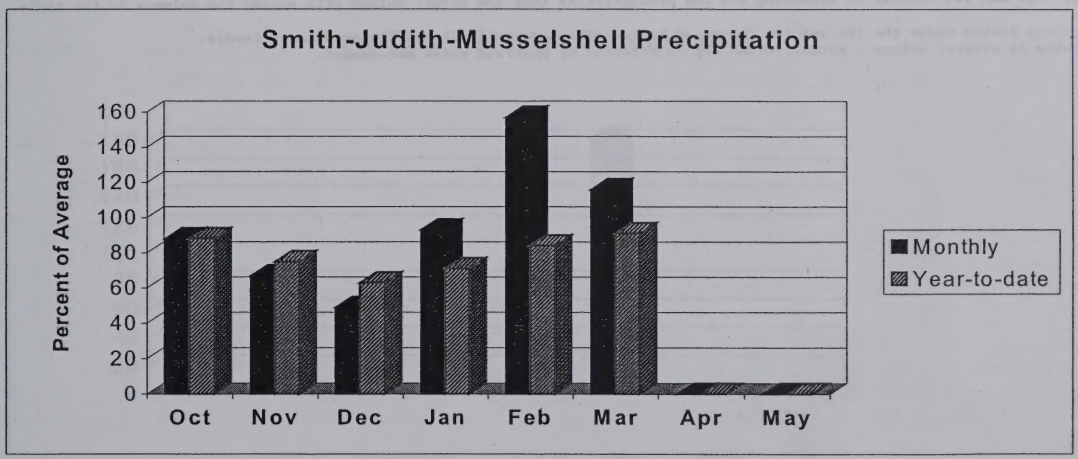
## Smith-Judith-Musselshell River Basins

**Snowpack conditions in the Smith-Judith-Musselshell River Basins were near average. Snow water content was 98 percent of average and 118 percent of last year. Snow water content in the Smith River Basin was 94 percent of average and 113 percent of last year; in the Judith River Basin was 95 percent of average and 112 percent of last year; and in the Musselshell Basin River was 102 percent of average and 131 percent of last year.**




January maximum swe was established in 1997 and minimum swe in 1988; February maximum swe was in 1978 and minimum swe was in 1987; March maximum swe was in 1978 and minimum swe was in 1987; April maximum swe was in 1970 and minimum swe was in 1992; and May maximum swe was in 1970 and minimum swe was in 1987; and June maximum swe was in 1967 and minimum swe was in 1987, 1992, 1994, and 2001. Average is for the period 1971 through 2000.

**Mountain and valley precipitation during March in the Smith-Belts was 126 percent of average and 121 percent of last year; in the Judith was 110 percent of average and 119 percent of last year; and in the Musselshell was 115 percent of average and 106 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 91 percent of average and 109 percent of last year.**




**Smith River storage was 78 percent of average and 305 percent of last year; Bair storage was 62 percent of average and 133 percent of last year; Martinsdale storage was 25 percent of average; and Deadman's Basin was 41 percent of average and 128 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.3 in the Smith River and -2.7 in the Musselshell River.**

## SMITH-JUDITH-MUSSELSHELL RIVER BASINS
### Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| SHEEP CREEK nr White Sulphur Spgs. | APR-JUL | 6.9 | 9.5 | 11.3 | 66 | 13.1 | 15.7 | 17.1 |
| | APR-SEP | 8.5 | 11.7 | 13.8 | 69 | 15.9 | 18.9 | 20 |
| SMITH RIVER abv Eagle Creek | APR-JUL | 82 | 114 | 135 | 77 | 156 | 188 | 175 |
| | APR-SEP | 91 | 132 | 160 | 76 | 190 | 230 | 210 |
| NF MUSSELSHELL nr Delpine | APR-JUL | 1.03 | 1.73 | 2.20 | 48 | 3.20 | 4.60 | 4.60 |
| | APR-SEP | 1.35 | 2.15 | 2.70 | 50 | 3.80 | 5.40 | 5.40 |
| SF MUSSELSHELL abv Martinsdale | APR-JUL | 7.0 | 14.0 | 18.7 | 36 | 32 | 52 | 52 |
| | APR-SEP | 7.8 | 15.6 | 21 | 38 | 35 | 56 | 56 |
| MUSSELSHELL at Harlowton (2) | APR-JUL | 20 | 27 | 31 | 40 | 42 | 57 | 77 |
| | APR-SEP | 23 | 29 | 34 | 42 | 45 | 61 | 81 |
| MUSSELSHELL nr Roundup (2) | APR-JUL | 11.0 | 14.4 | 16.7 | 17 | 30 | 51 | 99 |
| | APR-SEP | 13.0 | 16.0 | 19.0 | 19 | 33 | 53 | 102 |

## SMITH-JUDITH-MUSSELSHELL RIVER BASINS
### Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| SMITH RIVER | 10.6 | 5.8 | 1.9 | 7.4 |
| BAIR | 7.0 | 2.8 | 2.1 | 4.5 |
| MARTINSDALE | 23.1 | 2.7 | 0.0 | 10.9 |
| DEADMAN'S BASIN | 72.2 | 22.2 | 17.4 | 54.2 |

## SMITH-JUDITH-MUSSELSHELL RIVER BASINS
### Watershed Snowpack Analysis - April 1, 2003

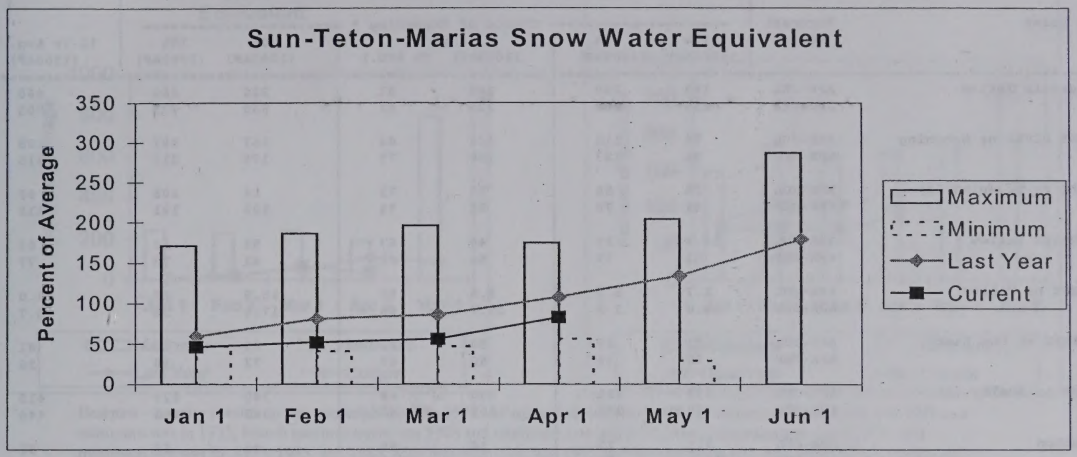
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| SMITH | 9 | 113 | 94 |
| JUDITH | 8 | 112 | 95 |
| MUSSELSHELL | 8 | 131 | 102 |
| SMITH-JUDITH-MUSSELSHELL | 18 | 118 | 98 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

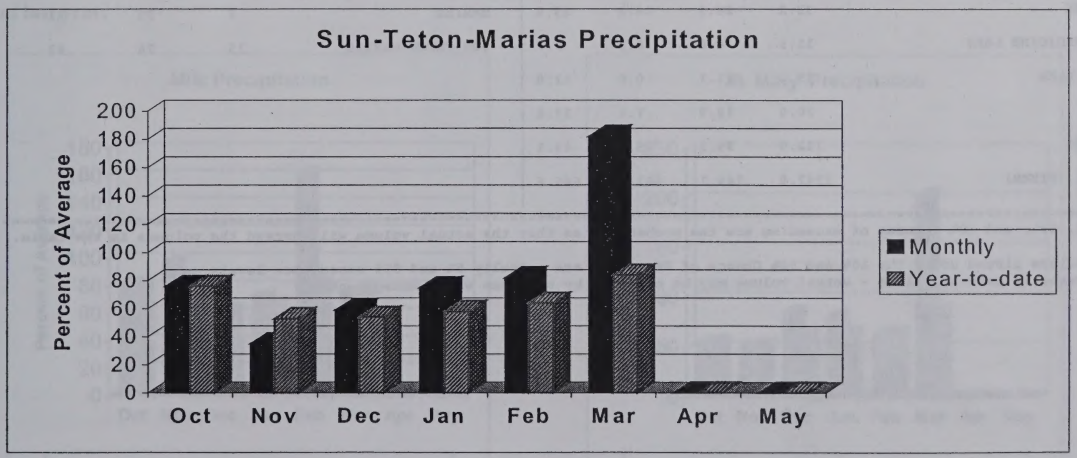
## Sun-Teton-Marias River Basins

**Snowpack conditions in the Sun-Teton-Marias River Basins were below average. Snow water content was 83 percent of average and 76 percent of last year. Snow water content in the Sun River Basin was 81 percent of average and 76 percent of last year; in the Teton River Basin was 86 percent of average and 79 percent of last year; and in the Marias River Basin was 81 percent of average and 72 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 2001; March maximum swe was in 1972 and minimum swe was in 1984; April maximum swe was in 1972 and minimum swe was in 1984; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum was in 1972 and minimum swe was in 1987, 1992, and 1998. Average is for the period 1971 through 2000.

**Mountain and valley precipitation during March in the Sun was 176 percent of average and 91 percent of last year; in the Teton was 198 percent of average and 104 percent of last year; and in the Marias was 176 percent of average and 109 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 84 percent of average and 84 percent of last year.**




**Gibson storage was 92 percent of average and 150 percent of last year; Pishkun storage was 107 percent of average and 99 percent of last year; Willow Creek storage was 118 percent of average and 199 percent of last year; Lower Two Medicine Lake storage was 41 percent of average; Four Horns Lake storage was 93 percent of average; Swift storage was 114 percent of average and 280 percent of last year; Lake Frances storage was 136 percent of average and 374 percent of last year; and Lake Elwell (Tiber) storage was 118 percent of average and 117 percent of last year.**

**Surface Water Supply Index (SWSI) was -3.5 in the Sun River; -1.3 in the Teton River; -1.3 in the Birch/Dupuyer Creeks; -1.5 in the Marias above Tiber Reservoir; and +0.1 in the Marias below Tiber Reservoir.**

## SUN-TETON-MARIAS RIVER BASINS
### Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| GIBSON Reservoir Inflow | APR-JUL | 180 | 240 | 280 | 61 | 320 | 380 | 460 |
| | APR-SEP | 215 | 280 | 320 | 63 | 360 | 425 | 505 |
| TWO MEDICINE RIVER nr Browning | APR-JUL | 74 | 113 | 140 | 68 | 167 | 207 | 205 |
| | APR-SEP | 84 | 123 | 150 | 70 | 176 | 216 | 215 |
| BADGER CREEK nr Browning (2) | APR-JUL | 38 | 58 | 72 | 73 | 86 | 106 | 99 |
| | APR-SEP | 49 | 70 | 85 | 74 | 100 | 121 | 115 |
| SWIFT RESERVOIR Inflow | APR-JUL | 14.0 | 29 | 40 | 63 | 51 | 66 | 64 |
| | APR-SEP | 22 | 39 | 50 | 65 | 61 | 78 | 77 |
| DUPUYER CREEK nr Valier | APR-JUL | 2.7 | 5.2 | 9.5 | 68 | 15.9 | 25 | 14.0 |
| | APR-SEP | 3.0 | 3.9 | 10.7 | 68 | 17.5 | 28 | 15.7 |
| CUT BANK CREEK at Cut Bank | APR-JUL | 23 | 39 | 50 | 62 | 61 | 77 | 81 |
| | APR-SEP | 30 | 48 | 60 | 67 | 72 | 90 | 90 |
| MARIAS RIVER nr Shelby (2) | APR-JUL | 133 | 221 | 280 | 68 | 340 | 425 | 415 |
| | APR-SEP | 147 | 235 | 295 | 67 | 355 | 445 | 440 |
| TETON nr Dutton | APR-JUL | 9.1 | 22 | 30 | 59 | 44 | 66 | 51 |
| | APR-SEP | 13.9 | 27 | 35 | 59 | 49 | 71 | 59 |

## SUN-TETON-MARIAS RIVER BASINS
### Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| GIBSON | 99.1 | 49.2 | 32.9 | 53.6 |
| PISHKUN | 32.0 | 19.5 | 19.6 | 18.3 |
| WILLOW CREEK | 32.2 | 28.2 | 14.2 | 23.8 |
| LOWER TWO MEDICINE LAKE | 11.9 | 4.0 | 0.0 | 9.7 |
| FOUR HORNS LAKE | 19.2 | 11.1 | 0.0 | 12.0 |
| SWIFT | 30.0 | 19.9 | 7.1 | 17.4 |
| LAKE FRANCES | 112.0 | 94.3 | 25.2 | 69.1 |
| LAKE ELWELL (TIBER) | 1347.0 | 764.1 | 651.6 | 645.6 |

## SUN-TETON-MARIAS RIVER BASINS
### Watershed Snowpack Analysis - April 1, 2003

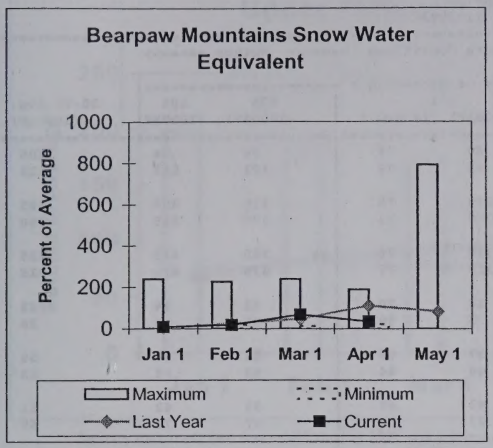
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| SUN | 7 | 76 | 81 |
| TETON | 4 | 79 | 86 |
| MARIAS | 6 | 72 | 81 |
| SUN-TETON-MARIAS | 15 | 76 | 83 |

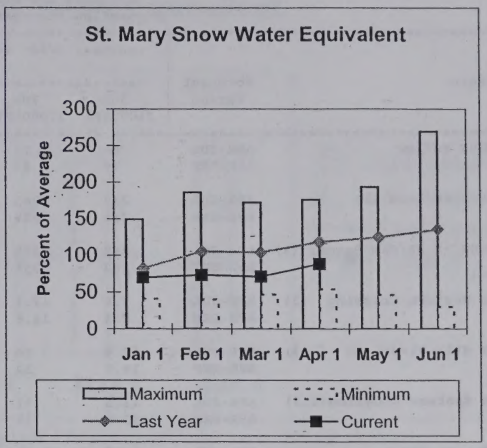
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

## St. Mary and Milk River Basins

**Snow water content in the Saint Mary River Basin was 88 percent of average and 75 percent of last year. The Milk River Basin (Bearpaw Mountains) was 34 percent of average and 31 percent of last year.**

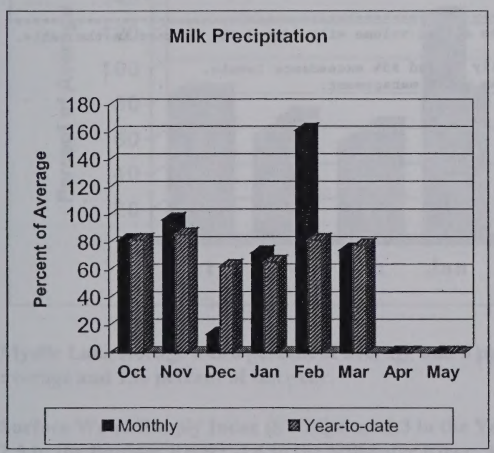


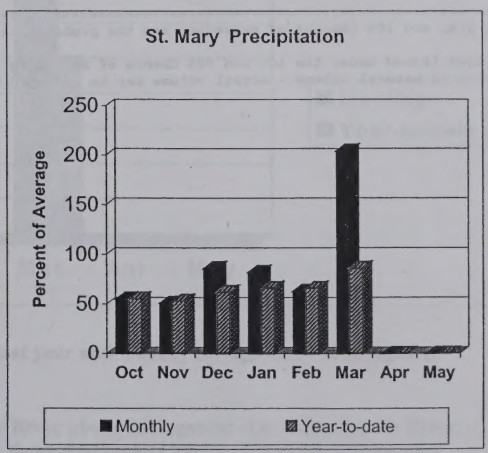




Bearpaw - January maximum swe was established in 1978 and minimum swe was in 1981; February maximum swe was 1978 and minimum was in 1973; March maximum swe was 1978 and minimum swe was 1995; April maximum swe was in 1985 and minimum swe was in 1973, 1983, and 1986; May maximum swe was 1975 and the minimum, 0.0, has occurred in several years. Average is for the period 1971 through 2000.

St. Mary - January maximum swe was established in 1997 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 2001; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 1967; May maximum swe was in 19972 and minimum swe was in 1977; and June maximum swe was in 1972 and minimum swe was 1992. Average is for the period 1971 through 2000.

**Mountain and valley precipitation in the St. Mary River Basin during March was 204 percent of average and 138 percent of last year; and in the Milk River Basin during March was 75 percent of average and 78 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 78 percent of average and 102 percent of last year.**




**Lake Sherburne storage was 72 percent of average and 96 percent of last year; Fresno storage was 101 percent of average; Beaver Creek storage was 156 percent of average and 780 percent of last year; and Nelson storage was 102 percent of average and 324 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.1 for the Milk River.**

## ST. MARY and MILK RIVER BASINS
## Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| LAKE SHERBURNE Inflow | APR-JUL | 66 | 74 | 80 | 76 | 86 | 94 | 105 |
| | APR-SEP | 79 | 89 | 95 | 78 | 101 | 111 | 122 |
| ST. MARY RIVER nr Babb (2) | APR-JUL | 230 | 265 | 290 | 75 | 315 | 350 | 385 |
| | APR-SEP | 285 | 325 | 350 | 78 | 375 | 415 | 450 |
| ST. MARY RIVER at US/CAN Border (2) | APR-JUL | 245 | 295 | 330 | 76 | 365 | 415 | 435 |
| | APR-SEP | 300 | 355 | 395 | 77 | 435 | 490 | 515 |
| MILK RIVER @ Western Crossing (3) | APR-JUL | 7.6 | 17.1 | 23 | 70 | 32 | 34 | 33 |
| | APR-SEP | 8.3 | 18.6 | 25 | 69 | 35 | 39 | 36 |
| MILK RIVER @ Milk River, AB (2,3) | APR-JUL | 12.6 | 30 | 37 | 67 | 48 | 57 | 55 |
| | APR-SEP | 14.3 | 32 | 40 | 64 | 53 | 64 | 62 |
| MILK RIVER @ Eastern Crossing(2,3) | APR-JUL | 11.5 | 31 | 42 | 69 | 53 | 62 | 61 |
| | APR-SEP | 13.8 | 37 | 47 | 68 | 57 | 74 | 69 |
| BEAVER CREEK near Havre | APR-JUL | 2.06 | 3.51 | 4.50 | 52 | 6.40 | 9.20 | 8.70 |

## ST. MARY and MILK RIVER BASINS
## Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| LAKE SHERBURNE | 64.3 | 17.9 | 18.6 | 24.8 |
| FRESNO | 127.0 | 75.8 | 3.2 | 75.0 |
| BEAVER CREEK | 3.5 | 3.9 | 0.5 | 2.5 |
| NELSON | 66.8 | 36.3 | 11.2 | 35.6 |

## ST. MARY and MILK RIVER BASINS
## Watershed Snowpack Analysis - April 1, 2003

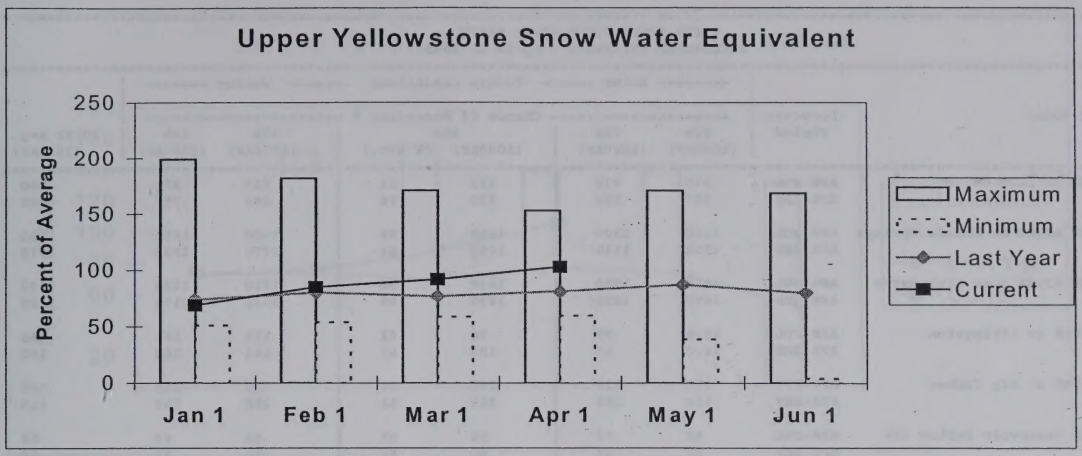
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| ST. MARY | 3 | 75 | 88 |
| BEARPAW MOUNTAINS | 4 | 31 | 34 |
| CYPRESS HILLS, CANADA | 0 | 0 | 0 |
| MILK RIVER BASIN | 4 | 31 | 34 |
| ST. MARY & MILK BASINS | 7 | 68 | 80 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

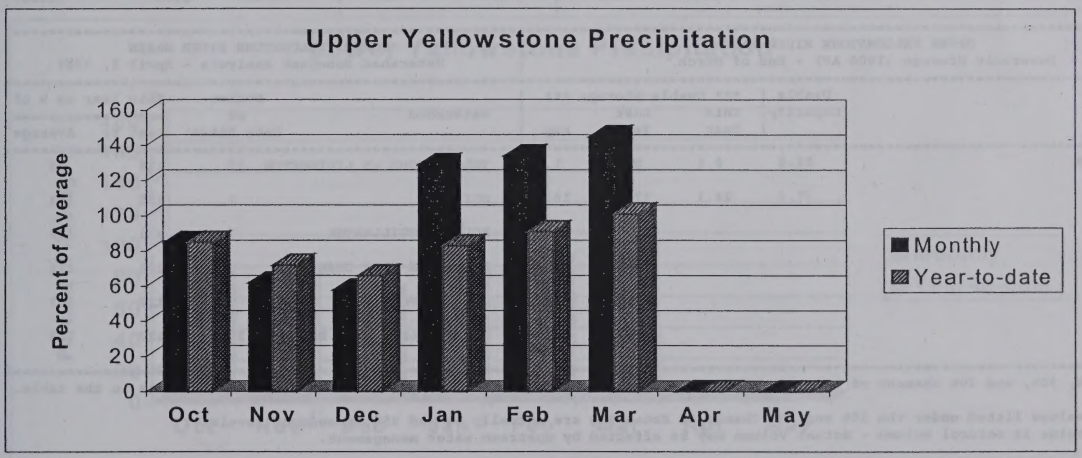
## Upper Yellowstone River Basin

**Snowpack conditions in the Upper Yellowstone River Basin were near average. Snow water content was 103 percent of average and 127 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 1988; February maximum swe was in 1997 and minimum swe was in 2001; March maximum swe was in 1997 and minimum swe was in 2001; April maximum swe was in 1971 and minimum swe was in 2001; May maximum swe was in 1997 and minimum swe was in 1987; and June maximum swe was 1996 and minimum swe was in 2001. Average is for the period 1971 through 2000.

**Mountain precipitation during March was 155 percent of average and 136 percent of last year. Valley precipitation during March was 98 percent of average and 192 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 101 percent of average and 120 percent of last year.**




**Mystic Lake storage was 6 percent of average and 5 percent of last year and Cooney storage was 132 percent of average and 136 percent of last year.**

**Surface Water Supply Index (SWSI) was -1.3 in the Yellowstone River above Livingston; -1.6 in the Shields River; -2.5 in the Boulder River; -2.4 in the Stillwater River; +1.2 in the Rock/Red lodge Creeks; -2.0 in the Clarks Fork River; and -1.7 in the Yellowstone River above Bighorn River.**

## UPPER YELLOWSTONE RIVER BASIN
## Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| YELLOWSTONE at Lake Outlet | APR-JUL | 375 | 435 | 475 | 81 | 515 | 575 | 590 |
| | APR-SEP | 505 | 580 | 630 | 78 | 680 | 755 | 805 |
| YELLOWSTONE RIVER at Corwin Springs | APR-JUL | 1160 | 1300 | 1400 | 85 | 1500 | 1640 | 1650 |
| | APR-SEP | 1370 | 1530 | 1650 | 84 | 1770 | 1930 | 1970 |
| YELLOWSTONE RIVER near Livingston | APR-JUL | 1430 | 1550 | 1630 | 86 | 1710 | 1830 | 1900 |
| | APR-SEP | 1690 | 1830 | 1930 | 85 | 2030 | 2170 | 2280 |
| SHIELDS RIVER nr Livingston | APR-JUL | 14.0 | 59 | 90 | 62 | 121 | 166 | 145 |
| | APR-SEP | 16.0 | 69 | 105 | 65 | 141 | 192 | 162 |
| BOULDER RIVER at Big Timber | APR-JUL | 170 | 210 | 240 | 84 | 270 | 310 | 285 |
| | APR-SEP | 173 | 220 | 255 | 81 | 290 | 335 | 315 |
| MYSTIC LAKE Reservoir Inflow (2) | APR-JUL | 40 | 46 | 50 | 85 | 54 | 60 | 59 |
| | APR-SEP | 53 | 60 | 65 | 86 | 70 | 77 | 76 |
| STILLWATER RIVER nr Absarokee (2) | APR-JUL | 285 | 345 | 390 | 79 | 435 | 495 | 495 |
| | APR-SEP | 355 | 425 | 470 | 80 | 515 | 585 | 585 |
| CLARKS FORK RIVER nr Belfry | APR-JUL | 340 | 390 | 425 | 79 | 460 | 510 | 540 |
| | APR-SEP | 375 | 430 | 465 | 78 | 500 | 555 | 595 |
| COONEY RESERVOIR Inflow (2) | APR-JUL | 17.0 | 32 | 42 | 89 | 52 | 67 | 47 |
| | APR-SEP | 27 | 42 | 53 | 93 | 64 | 79 | 57 |
| YELLOWSTONE RIVER at Billings (2) | APR-JUL | 1780 | 2330 | 2700 | 77 | 3070 | 3620 | 3510 |
| | APR-SEP | 2220 | 2860 | 3300 | 80 | 3740 | 4380 | 4120 |

## UPPER YELLOWSTONE RIVER BASIN
## Reservoir Storage (1000 AF) - End of March

| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| MYSTIC LAKE | 21.0 | 0.1 | 2.0 | 1.8 |
| COONEY | 27.4 | 24.1 | 17.7 | 18.3 |

## UPPER YELLOWSTONE RIVER BASIN
## Watershed Snowpack Analysis - April 1, 2003

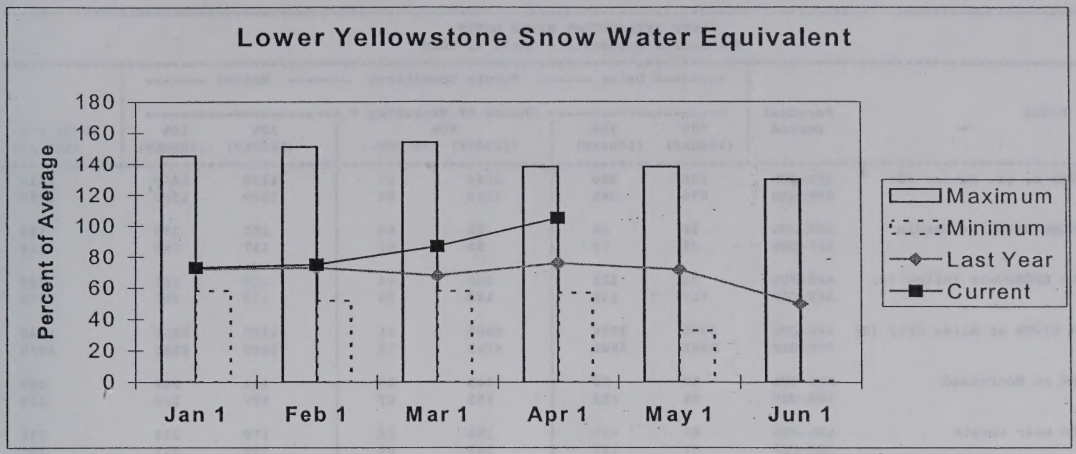
| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| YELLOWSTONE ab LIVINGSTON | 17 | 115 | 99 |
| SHIELDS | 7 | 125 | 101 |
| BOULDER-STILLWATER | 7 | 131 | 106 |
| RED LODGE-ROCK CREEK | 5 | 191 | 126 |
| CLARK'S FORK | 7 | 127 | 107 |
| UPPER YELLOWSTONE BASIN | 39 | 127 | 103 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

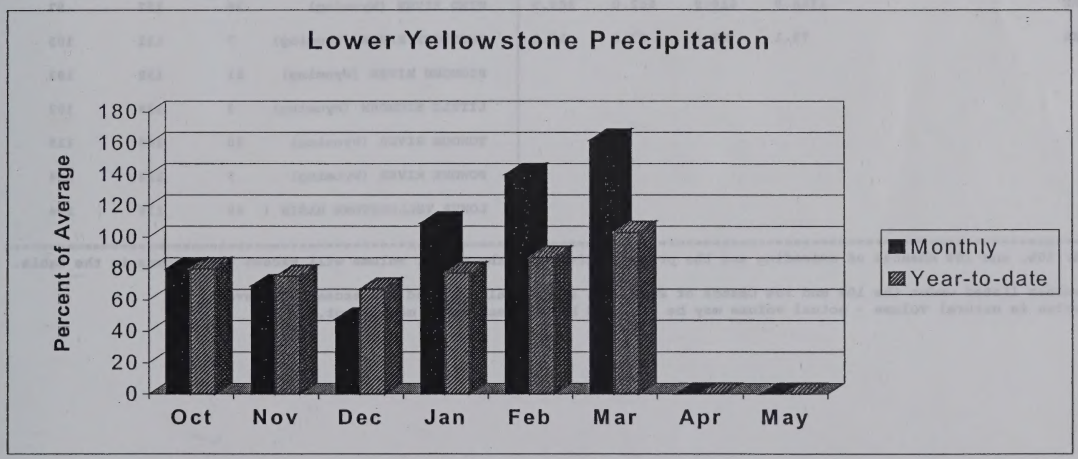
## Lower Yellowstone River Basin

**Snowpack conditions in the Lower Yellowstone River Basin, in Wyoming, were slightly above average. Snow water content was 105 percent of average and 135 percent of last year.**




January maximum swe was established in 1997 and minimum swe was in 2000; February maximum swe was in 1997 and minimum swe was in 2001; March maximum swe was in 1986 and minimum swe was in 2001; April maximum swe was in 1986 and minimum swe was in 2001; May maximum swe was in 1997 and minimum swe was in 1981; and June maximum swe was in 1995 and minimum swe was in 2001. Average is for the period 1971 through 2000.

**Mountain and valley precipitation during March was 162 percent of average and 160 percent of last year. Mountain and valley water year precipitation, beginning October 1, 2002, was 103 percent of average and 126 percent of last year.**




**Bighorn Lake storage was 75 percent of average and 92 percent of last year and Tongue River storage was 159 percent of average and 177 percent of last year.**

**Surface Water Supply Index (SWSI) was -2.9 in the Bighorn River below Bighorn Lake; -1.8 in the Little Bighorn River; -2.2 in the Yellowstone River below Bighorn River; -2.3 in the Tongue River; and -1.7 in the Powder River.**

## LOWER YELLOWSTONE RIVER BASIN
### Streamflow Forecasts - April 1, 2003

| Forecast Point | Forecast Period | <<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF) | 70% (1000AF) | 50% (1000AF) | 50% (% AVG.) | 30% (1000AF) | 10% (1000AF) | 30-Yr Avg. (1000AF) |
|---|---|---|---|---|---|---|---|---|
| BIGHORN RIVER nr St. Xavier (2) | APR-JUL | 630 | 880 | 1050 | 65 | 1220 | 1470 | 1610 |
| | APR-SEP | 670 | 945 | 1130 | 64 | 1320 | 1590 | 1760 |
| LITTLE BIGHORN RIVER nr Hardin | APR-JUL | 36 | 65 | 85 | 66 | 105 | 134 | 128 |
| | APR-SEP | 42 | 73 | 95 | 66 | 117 | 148 | 144 |
| TONGUE RIVER RESERVOIR Inflow (2) | APR-JUL | 93 | 121 | 140 | 64 | 159 | 187 | 220 |
| | APR-SEP | 113 | 141 | 160 | 64 | 179 | 205 | 250 |
| YELLOWSTONE RIVER at Miles City (2) | APR-JUL | 2395 | 3230 | 3800 | 71 | 4370 | 5200 | 5360 |
| | APR-SEP | 2993 | 3960 | 4620 | 74 | 5280 | 6250 | 6210 |
| POWDER RIVER at Moorehead | APR-JUL | 39 | 99 | 140 | 68 | 181 | 242 | 205 |
| | APR-SEP | 52 | 113 | 155 | 67 | 197 | 258 | 230 |
| POWDER RIVER near Locate | APR-JUL | 88 | 125 | 150 | 64 | 175 | 210 | 235 |
| | APR-SEP | 97 | 137 | 165 | 64 | 193 | 231 | 260 |
| YELLOWSTONE RIVER nr Sidney (2) | APR-JUL | 2415 | 3270 | 3850 | 70 | 4430 | 5290 | 5480 |
| | APR-SEP | 2915 | 3894 | 4560 | 73 | 5223 | 6203 | 6280 |

## LOWER YELLOWSTONE RIVER BASIN
### Reservoir Storage (1000 AF) - End of March

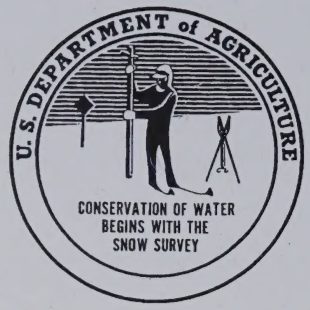
| Reservoir | Usable Capacity | *** Usable Storage *** This Year | Last Year | Avg |
|---|---|---|---|---|
| BIGHORN LAKE | 1356.0 | 610.9 | 662.0 | 809.9 |
| TONGUE RIVER | 79.1 | 47.9 | 27.0 | 30.1 |

## LOWER YELLOWSTONE RIVER BASIN
### Watershed Snowpack Analysis - April 1, 2003

| Watershed | Number of Data Sites | This Year as % of Last Yr | Average |
|---|---|---|---|
| WIND RIVER (Wyoming) | 20 | 127 | 97 |
| SHOSHONE RIVER (Wyoming) | 7 | 131 | 105 |
| BIGHORN RIVER (Wyoming) | 21 | 132 | 103 |
| LITTLE BIGHORN (Wyoming) | 3 | 139 | 102 |
| TONGUE RIVER (Wyoming) | 10 | 149 | 115 |
| POWDER RIVER (Wyoming) | 9 | 138 | 104 |
| LOWER YELLOWSTONE BASIN ( | 49 | 136 | 104 |

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.




Federal Building, Room 443
10 E. Babcock
Bozeman, MT 59715

# Montana
# Water Supply Outlook
# Report

Natural Resources Conservation Service
Bozeman, MT